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A Contrast.

Heavy Snow.

A dispatch from Erie, Pa., dated October 20, says: "The gale from the southwest which struck this section yesterday had a snow-storm with it, the worst ever known in this section so early in the year. The snow has been falling incessantly since five o'clock this morning, and there is now ten inches on the level. Vessels are unable to leave port, and those which ventured out forty-eight hours ago are getting back if they can. The snow is very wet, and thousands of dollars of damage is being done fruit and shade trees, as the leaves have not yet fallen, and the trees are being crushed."

200,000 Acres Laid Waste.

AKRON, COLO., Oct 21.—Eastern Colorado and Western Kansas have been visited during the past four days by terrible prairie fires. Under a strong wind it swept almost barren a strip of territory for four miles. Greely county, Kansas, suffered severely, over 200,000 acres in that county alone being burned. A great deal of broom corn, grain and forage was destroyed, together with barns, hay in the stack and outbuildings. In Wichita county four houses were destroyed.

Ruined by Sand-Storms.

ST. PAUL, Oct. 20.—Sand and dust storms have been cutting everything in Minnesota, Dakota and Iowa for two days. The wind has blown from fifty to seventy miles an hour, prairie fires are burning all over the State and the loss is estimated at more than $1,000,000. The Red River valley has been burned bare, and the destruction extends up into Manitoba. Crookston, Kerstonville and Tilden suffered heavy loss. Hundreds of farmhouses and barns are burned. Two lives have been reported lost. The storms came from the northwest, and owing to the prevailing drought it required only a spark to ignite the whole country.

In the South the weather has been the perfection of Indian summer—crops are being gathered, farmers are happy over high prices, and throughout this entire section "every prospect pleases." Nature's wonderful gifts to this favored land are being more and more appreciated, and the outside world is fast learning that no other section offers such attractions and advantages. The tide has turned our way, where sand-storms and prairie fires are unknown, and snow-storms are rare, even in midwinter.

PROBABLY the most important business matter now before the American public is the construction of the Nicaraguan Canal. The value of this canal to the whole country, and especially to the South, cannot be overestimated. Hence the MANUFACTURERS' RECORD devotes much space to it in this issue, and will continue to do so until the question is finally settled by Congress. In addition to the many letters from Congressmen published today, we also give a letter from Prof. Courtenay De Kalb, a distinguished engineer, who has made a personal investigation of both the Nicaraguan and Panama routes, and a careful study of all treaties bearing on them.

Expanding Our Foreign Interests.

British manufacturers are becoming stirred up over the increasing foreign trade of American manufacturers. A writer in a London iron journal says:

The question is often asked whether England has anything to fear in the future from American competition. Let the following three items from a recent issue of the Engineering and Mining Journal serve for a reply:

"The M. C. Bullock Manufacturing Co., of Chicago, has recently delivered to Reed Bros., of Johannesburg, in the Transvaal, five diamond drills, and also a 'Dauntless' drill, with all the necessary equipment for boring to a depth of 1800 feet."

"The South African Mining Journal of recent date notes that the Langlaagte Gold Mining Co., in the Witwatersrand district, is putting up an air compressor supplied by the Gates Iron Works Co. The last named company has also recently erected a trimain steam stamp mill at the No. 2 shaft of the Robinson mine for the purpose of showing its efficiency in sampling and prospecting work."

"On September 9 the Bethlehem Iron Co. shipped fifteen more turret-plates to Admiral Virchowsky, at St. Petersburg, for Russian war vessels. The shipment is the sixth made to Russia. It weighed 205 tons. Forgings for four-inch and five-inch guns, weighing eighteen tons, have been shipped to the Washington navy-yard."

The transfer from England to the United States of the control of the world's iron trade, which is now in progress, means far more than our English friends seem yet to have fully realized, and following this will come the transfer of the control of textile interests. There is great depression in Lancashire, and many of the mills are operating at a loss. They cannot stop without greater loss, and so they keep on, ever hoping for better times.

One of the largest mill companies in that district recently told a friend of the writer that they were losing heavily every week, but to shut down meant to treble their losses. This company, like others, is now eating up its surplus and living in hopes, but the fact of the matter is that their is little ground for encouragement. Economic conditions are changing many interests, and cotton manufacturing must go to Japan, China, India or to the South.

What the loss, not of its iron and cotton interests, but of the dominating control of the world's trade in these industries, will cost England, and what the transfer to this country of this position means to the United States, and especially to the South, it is hard to forecast. We enter upon a new epoch in our history—one in which every interest must broaden out to meet these new conditions, and one in which American commerce and American shipping must prepare to take the leading place throughout the world.

Attracting Attention to the South.

One of the most practical evidences of appreciation of the Atlanta Exposition that has as yet been given to the public was the splendidly illustrated "fifth section" of last Sunday's issue of the New York Herald. That great paper, which was one of the first of the metropolitan journals to recognize the broad scope of this enterprise and the great influence it would have upon the future of the South and upon interstate and Pan-American commerce, has in the six pages it devoted to the exposition last Sunday demonstrated to the world that "The Fair of the New South" not only "makes more familiar to all parts of the country the enormous resources" of that section and "the abundant energies of its people," but that it furnishes overwhelming proofs "that there are no longer any political divisions of the Fatherland, nor any commercial interests which are not dependent upon and integral parts of a splendid whole;" that it is far more than a material success in that "it bears in its progress the complete assurance of the greatness of the United States."

In this splendid tribute to the exposition the Herald did not attempt to describe what it has done or will do for the South, but it called upon some of her eminent children "who know their mother well," and "have seen the struggles of their fathers and brothers toward commercial regeneration," to tell by what struggles "these Americans have gathered together the wreckage and out of it have built a structure which is stupendous in its majesty and its promise of the future."

The contributors to the symposium that accompanies the fine illustrations are Director-General Charles A. Collier, who declares that the exposition begins an epoch in our commercial history; Samuel M. Inman, who contends that the South controls the cotton crops and the cotton markets of the world; Dr. Chas. W. Dabney, Jr., assistant secretary of agriculture, who gives in brief the history of cotton from the beginning of its cultivation in this country, and predicts that "the day is not far distant when the Southern farmer will raise all the food for himself and family at home, supply the local markets with vegetables, fruits, cereals, meat and dairy products," and by intensive farming raise more cotton on fewer acres. "The New South will never bow down to cotton as king, but this plant will ever be among her chief instruments of profit."

Dr. David T. Day contributes a comprehensive paper on the South's mineral wealth, and explains the plan of the government exhibit at the exposition, which embraces the Appalachian system from Mason and Dixon's line to the Rio Grande, to which are added the mineral wealth of Pennsylvania and the clays and building stones of all parts of the South.

The forestry of the South is the subject discussed by Dr. B. E. Fernow, who says that the display in the east wing of the rustic Forestry Building is designed "to bring before the visitor all information obtainable regarding the extent, distribution, character and usefulness of the forest resources of the Southern States." The educative and instructive features have been made most prominent not only in the government exhibit, but in those contributed by States and individuals.

With these exhibits is a series of maps, one for each of the fourteen Southern States, that show "where the different types of forest growth are to be found—the pine lands, the long-leaf, short-leaf or loblolly pines, the cypress swamps, and the hardwoods, cut-over or virgin." These displays show that "for variety of kind, of quality and of appearance no other country can vie with the woods of the South."

Another series of exhibits, the like of which has never before been attempted at an exposition, "are the lumber displays of commercial kinds." Here, says Dr. Fernow, "the lumberman can learn what the capacity of the various kinds for production is and for application of his material. This study is further enhanced by the display of the timber test work of the forestry division, towering with its large, broken columns and beams over everything else in the building. It is on these large-sized materials, as well as on the smaller blocks and beams, that the tests have been performed, which have proved that the timber bled for turpentine is in no way inferior to the unbled, thus adding $2,000,000 of value to the turpentine orchards of the South. It is from these tests that an annual saving of many million dollars has become possible in the constructions with Southern pine. To bring this to ocular demonstration two bridge-trestle bents have been installed, showing the old wasteful methods and the new method, based upon the accurate data furnished by the forestry division. Engineers, architects, builders and lumbermen can here learn the true strength and value of Southern timbers. Their use is becoming more necessary, as the supplies of the North, especially of the white pine, are waning, and hence this knowledge becomes more and more important. To show the enormous amounts even now marketed a statistical column has been erected, showing the amount of wood

and of lumber, respectively, being cut for every second of time in the year in the Southern States. What this quantity denotes can perhaps be best realized by comparing this column with the mineral column opposite, which shows the output of minerals for one minute of time, i. e., one-sixtieth of the column of wood."

There are other valuable contributions to the Herald's symposium that will interest and instruct its hundreds of thousands of readers, as will the beautiful illustrations in colors and in black, but the MANUFACTURERS' RECORD has selected the foregoing for special mention because of the influence they will have upon manufacturers and investors in attracting them to the exposition, who, but for these practical, business-like statements of the object-lessons to be seen there, would never have thought of journeying to Atlanta "to see the show."

By obtaining and publishing these papers the New York Herald has set an example that correspondents representing the influential newspapers of the country at the exposition will serve their readers by following. The commercial is the distinguishing feature of this exposition; all others are subsidary. Those elsewhere who care for the social side of it are few. The great majority of American readers wish to be told about the natural resources, industries, the opportunities for profitable investments, that are presented at this exposition. They want such information about all these as Drs. Day, Fernow and Dabney have given concerning their special departments. Comparatively few people will go South during the next two months "just to see the show," fine and attractive as it is, but many thousands will do it if fully informed of the unique and varied character of the great practical object lessons that are there presented.

Another Cotton Mill.

The projectors of the Broad River Cotton Mill, at Columbia, S. C., have organized a company with that title. It is capitalized at $150,000, and it is understood electric and steam power will be used. This is the fifth cotton-mill company formed in that city within a year.

Secured the Contract.

A dispatch states that the Howard-Harrison Iron Co., of Bessemer, Ala., has secured the contract for supplying 4900 tons of iron pipe for the sewer system at Jacksonville, Fla. The contract, which is valued at between $75,000 and $100,000, was secured in competition with several Northern concerns, among them Wood & Co., of Philadelphia, and the Neal Pipe & Foundry Co., of Burlington, N. J.

How to Attract Northern and Western Investors and Land Buyers.

Messrs. Pannill Bros., real-estate dealers, Norfolk, Va., writing about the outlook of real estate in that section, say:

"We have within the past two years made quite an outlay in advertising, and we can truthfully say that the *Southern States* magazine exceeds by far anything we have ever tried. In fact, so far as we can learn, it is the only medium that has ever brought us any returns. We have now under advisement several matters brought about through answers to our advertisement in your paper, any one of which will pay us many times over the cost of the advertisement."

It would pay every town and every property-owner and agent in the South to advertise in the *Southern States* magazine. It is published by the Manufacturers' Record Publishing Co., Baltimore, Md.

CONGRESSIONAL VIEWS ON THE NICARAGUAN CANAL.

An Overwhelming Majority of Replies Received in Favor of Government Aid in Some Way.

MANY WANT ABSOLUTE GOVERNMENT OWNERSHIP.

The MANUFACTURERS' RECORD, in order to test the sentiment of Congressmen in regard to the Nicaragua Canal question, sent a letter to every member asking if he would vote in favor of government aid, provided the report of the commission appointed at the last session should be favorable as to the feasibility of its construction. Up to the time of going to press 128 replies had been received, of which 106 were in favor of government aid or control, two were opposed and the others were non-committal. Very many express the desire that the government should build and own the canal in preference to aiding a corporation. In view of this, and of the concessions as they are now held, the MANUFACTURERS' RECORD is inclined to think that the outcome will be a bill to insure the early construction of the canal, but possibly under the direction of army or naval officers, thus probably meeting the conflicting views of all. We give below the questions asked and the letters received in reply:

1. "If the special Nicaraguan Canal committee, appointed by act of Congress, makes a favorable report upon the feasibility of the canal, will you probably favor government aid looking to its early construction?"

2. "General comments for or against."

W. W. Bowers, San Diego, Cal.: "Yes. I am earnestly in favor of the building of the Nicaraguan Canal by the government, whether it cost $100,000,000 or $200,000,000. I regard it as one of the greatest enterprises the United States can engage in. It is, in fact, a necessity to enable the Atlantic and Pacific coasts to trade with each other. The long, expensive haul across the continent by rail in many respects absolutely prohibits trade between the eastern and western portions of the United States, so both send their money to foreign countries. I don't think the canal will be of any particular use to the people of the United States if built by a private company. The United States must control it so far as rates of toll are concerned; that's about all we want. We see that railroad and steamship corporations readily combine and destroy competition even by sea on many articles, but if the rates of toll are made low, so the innumerable tramp steamers and sailing vessels can engage in the carrying trade between the States, it would be of the greatest benefit to the people. It doesn't make much difference in what shape the bill comes, so long as the United States controls the rates of toll; nor should any attempt be made, in my estimation, to make it pay the bonds and interest. It would save every year to the people of the United States more than the $200,000,000 which it will probably cost in the end. The bill would have passed the House by a good majority last session if the speaker had let it come to a vote. But he would not even let it be voted on without discussion. If it don't pass this winter, you may set it down in your books that the railroad corporations of the country control it absolutely."

John A. Barham, Santa Rosa, Cal.: "I shall do all in my power to aid in the passage of a bill for the construction and governmental control of the Nicaragua Canal. I am of the opinion that the construction and operation of the Nicaragua Canal by the government of the United States will change the centre of the commerce of the world. There is no legislation which will or can come before Congress of greater importance not only to the entire Union, but to the whole world than the early construction of the Nicaragua Canal."

J. H. Gallinger, Concord, N. H.: "Yes. There can be no question as to the desirability of the Nicaragua Canal. It will be a commercial highway of incalculable benefit to the United States, and no reasonable expenditure should be withheld to secure its construction. My opinion is that the government should have entire control of the enterprise, but if that is not feasible, then the government should make liberal appropriations in aid of its construction."

Justin S. Morrill, Strafford, Vt.: "So important to the national interests of the United States is the Nicaragua Canal that our government, as I think, could afford to build it were it as certain to yield no revenue as it is to be a better paying investment than the Suez Canal."

John M. Palmer, Springfield, Ill.: "I am in favor of the construction of the Nicaragua Canal by the United States as an improvement on its coast line. I am opposed to government aid to a private corporation. I assume that the report will prove that the canal scheme is practicable at a reasonable cost. If the canal scheme is worthy of government aid it ought to be constructed by the United States with its own money and kept under its own control. Any other scheme of construction allows stealing ad infinitum. See the Panama Canal."

James Smith, Jr., Newark, N. J.: "No; not until we see how much the people of this country will be obliged to pay for the aid given the Pacific railroads."

William P. Frye, Lewiston, Me.: "Shall favor the building of canal by government aid. Have advocated the construction for the last twenty years by the government."

John T. Morgan, Selma, Ala.: "The building of the canal is forced by a necessity that the whole world admits. I attach no more importance to the report of the commission than I would to the review of the standing army by a militia brigadier on the eve of battle."

Calvin S. Brice, Lima, Ohio: "I have always voted favorably to the enterprise under proper circumstances, and may do so again."

John Sherman, Mansfield, Ohio: "I have always been in favor of the construction of the Nicaragua Canal, and made a formal report to the Senate covering the whole ground. I have not a copy of it or would send it to you. I think it ought to be constructed under government control at as early a period as our financial condition will allow."

S. Pasco, Monticello, Fla.: "In my action as a senator I have favored the construction of the canal by the government if the company which has taken the matter in charge is unable to build it with its own money. I did not, however, favor the bill reported by the committee on foreign affairs, because it provided that the money should be furnished by the government to enable a corporation to construct the work, and, in my opinion, if the canal is to be built by the government the money should be handled by United States officials, the work should be done under the direction of United States engineers, and the canal should be the property of the United States and under the direction and control of its officers when completed. Taking this view, I spoke and voted against the bill as it came from the committee on foreign affairs. Subsequently I introduced an amendment to an appropriation bill, providing for a board of engineers to examine and report upon the feasibility and cost of the enterprise, and this amendment was adopted, and, acting under this authority, the present commission is doing the work contemplated by the amendment. If the report is favorable it will afford a basis for future action, and I shall be in favor of the construction of the canal as a government measure if the work is feasible and it can be constructed within a reasonable limit of cost."

John W. Daniel, Lynchburg, Va.: "I will state in a general way that I appreciate the importance of the Nicaragua Canal to the commerce of this country, and am in favor of our government controlling it and aiding in its construction. Beyond this I am unwilling to commit myself to any measure until I can examine its merits, but I am definitely in favor of the enterprise."

Foster V. Brown, Chattanooga, Tenn.: "Yes; I certainly shall. I prefer to have the government own the canal, if possible, instead of giving any corporation aid to build, though I am for any reasonable plan to get the canal."

James A. Walker, Wytheville, Va.: "I have no hesitation in replying that if the special Nicaraguan Canal committee appointed by the act of Congress makes a favorable report upon the feasibility of the canal, I will, as at present advised, most certainly favor government aid looking to its early construction."

N. D. Sperry, New Haven, Conn.: "I favor the same under proper conditions."

Marriott Brosius, Lancaster, Pa.: "My views are not yet matured on the subject of the Nicaraguan Canal."

Thos. McEwan, Jr., Jersey City, N. J.: "I favor the construction of a canal, but am not prepared to pass upon the question of the Nicaragua Canal until after further investigation."

Wm. Sulzer, New York, N. Y.: "I favor the Nicaragua Canal, and will do all in my power to further its building and completion under the sanction and control of the government of the United States."

Alfred C. Harmer, Philadelphia, Pa.: "I never commit myself to any legislation in advance of knowing the exact provisions of the proposition before Congress I am progressive in my views of such public works as may influence the development and prosperity of our country, and believe it is well in such cases for the government to give its aid."

Robert Adams, Jr., Philadelphia, Pa. "Yes; under proper restrictions"

C. W. Stone, Warren, Pa.: "Yes. I regard the building of the Nicaragua Canal as a matter of great national importance that ought to have prompt attention."

Henry R. Gibson, Knoxville, Tenn.: "If American genius, backed by American money, can build the Nicaraguan Canal, I am in favor of hoisting the American flag over it, and completing it as rapidly as practicable. The Nicaraguan Canal is as indispensable to the United States as the Straits of Gibraltar are to Europe."

Geo. C. Perkins, Oakland, Cal.: "I shall use all honorable means at my command to have our government aid in the construction of the Nicaraguan Canal."

George M. Curtis, Clinton, Iowa: "Under the above favorable conditions I would favor government aid."

Binger Hermann, Roseburg, Ore.: "I am for government aid, and wish the canal built by Americans under government control, and, if possible, government ownership. No single measure now before the American people can do so much to aid in the prosperity of our nation."

J. W. Babcock, Necedah, Wis.: "I am earnestly in favor of the construction of the Nicaraguan Canal, and believe that the

government should aid in its construction and control it absolutely after it is completed."

Peter J. Otey, Lynchburg, Va.: "Yes. As at present advised, I am opposed to the government endorsing any bonds for any corporation, but would favor issuing bonds to build the canal on government account."

W. S. Kerr, Mansfield, Ohio: "I am heartily in favor of the canal. No one project or measure bears any comparision to this in importance to the commerce and general welfare of the people of the world. It would develop the Pacific coast into great stopping-places for the commerce from the East to our Eastern and European stations. It would more closely bind the East and the West, and save millions of miles in distance to the next generation."

Charles Daniels, Buffalo, N. Y.: "I cannot positively say as long as the Clayton-Bulwer treaty may stand in the way."

Elijah A. Morse, Canton, Mass.: "I am most heartily in favor of our government giving the necessary aid, under proper safeguards, for the construction and completion of the Nicaraguan Canal. Its completion would mark an epoch in the history of the world; it would be an artery of commerce perhaps unequalled by any other on the face of the earth, and it should be owned and controlled by the government of the United States. Its importance to us as a nation in time of peace or war cannot be overestimated. I believe that it is going to be built under the patronage of this government at no distant day."

George F. Huff, Greensburg, Pa.: "My inclination is to favor government aid, but my action will be governed somewhat by the report of the special committee."

James F. Stewart, Paterson, N. J.: "Yes. Comment is unnecessary. Every patriot will favor the canal. The United States alone should own and control it. We should be more loyal and steadfast to the 'Monroe doctrine.'"

John B. Robinson, Media, Pa.: "I am, and have been since my service in Congress, beginning with the Fifty-second Congress, heartily in favor of the Nicaraguan Canal. I hope something practical may be done by the Fifty-fourth Congress to aid the project. There are countless reasons why the canalization at this point will be of vast commercial importance to the United States. The strategic military advantage of the canal dominated commercially by the United States would be immense in case of maritime war with any of the first-class powers. I cannot be quoted anywhere or any place too strongly in favor of this canal and its ownership, commercially and militarily, by the United States of America."

Harry Welles Rusk, Baltimore, Md.: "Will favor construction under government control and government expense. Oppose any mixed ownership by government and individuals."

N. M. Curtis, Ogdensburg, N. Y.: "Yes."

Ashley B. Wright, North Adams, Mass.: A favorable report from the special committee will encourage my present inclination to favor government aid."

Charles A. Russell, Killingly, Conn.: "Yes; most assuredly.'

James R. Howe, Brooklyn, N. Y.: "I would be in favor of government aid."

Charles N. Fowler, Elizabeth, N. J.: "I am favorable to extending government aid to the enterprise. I believe the United States should control it."

J. W. Wadsworth, Geneseo, N. Y.: "Am in favor of the United States government guaranteeing the interest on bonds (3 per cent.), provided certain amount of tolls are paid over to the government by the company."

J. H. Huling, Charleston, W. Va.: "In reply to your question in reference to the Nicaragua Canal, will say, if the committee appointed by Congress makes favorable report on same within reason, I shall favor giving government aid in the construction of the Nicaragua Canal. It is an enterprise that deserves encouragement. The construction of the same would greatly enhance the commercial interests of our country."

John E. Reyburn, Philadelphia, Pa.: "My inclinations are favorable."

J. E. Washington, Cedar Hill, Tenn.: "With such facts and information as I now have, it seems to me that if the canal is constructed at all, it ought to be undertaken as a work of the government, like our river and harbor work, with no partnership in it."

Alston G. Dayton, Philippi, W. Va.: "Yes."

A. S. Berry, Newport, Ky.: "Not unless the government has absolute control. I am satisfied that the government should have no partnership with individuals or corporations, but think the canal should be constructed by the United States."

J. H. Bromwell, Cincinnati, Ohio: "Will vote for it."

W. B. Hooker, Fredonia, N. Y.: "Yes."

Seth L. Milliken, Belfast, Me.: "I am in favor of the construction of the Nicaragua Canal by government encouragement and aid if necessary, and believe it should be controlled by the United States."

J. Frank Aldrich, Chicago, Ill.: "I shall probably favor government aid and control."

Geo. P. Harrison, Opelika, Ala.: "Yes. While I favor the construction of the canal, and am willing that the government shall aid in it, I regard it of very great importance that any bill granting aid should be very carefully guarded. I shall support no bill that smacks of jobbery."

Roland B. Mahany, Buffalo, N. Y.: "Yes."

S. A. Northway, Jefferson, Ohio: "Believing that the proposed Nicaragua Canal is needed for commercial extension and national defence, I am in favor of its construction and operation by the government of the United States, or under its protection, but cannot say, without further light on the subject, which one of these courses ought to be adopted by Congress."

Chas. N. Brumm, Minersville, Pa.: "I am in favor of government aid for the Nicaraguan Canal."

Theo. Otjen, Milwaukee, Wis.: "Yes. I think this government should control the Nicaraguan Canal."

Horace G. Saover, Port Austin, Mich.: "Yes. I think the canal is a necessity, and that this government should have control of same."

Ernest F. Acheson, Washington, Pa.: "Yes. If the canal costs twice the sum now estimated, I do not believe the government could expend the amount in any other way that would be of equal advantage to our people."

V. Warner, Clinton, Ill.: "Yes."

C. H. Yoakum, Greenville, Texas: "I will favor such a bill provided the canal can be controlled by the United States."

O. M. Kerm, Broken Bow, Neb.: "I am opposed to appropriations of any sort other than just sufficient to pay current expenses so long as the government pursues a policy which compels it to issue bonds in time of peace, and in no case will I support the Nicaraguan scheme except it is taken sole charge of by the government, built and controlled as a government enterprise."

Oscar W. Underwood, Birmingham, Ala.: "Yes. With the Nicaragua Canal open to commerce Alabama will control the iron markets of the world."

R. W. Taylor, Lisbon, Ohio: "Yes."

Melville Bull, Newport, R. I.: "Yes."

Theodore L. Poole, Syracuse, N. Y.: "I favor the building of the Nicaragua Canal, and hope that the report of the committee may show the project to be feasible. I would not agree to vote for any proposition looking towards financial aid from the government until our receipts from customs and other sources other than the sale of bonds at least equal our expenditures."

Benj. L. Fairchild, Pelham Heights, N. Y.: "Patriotism dictates that the government should secure control of the canal."

Tazewell Ellett, Richmond, Va.: "I am heartily in favor of the construction of the Nicaraguan Canal, and while I cannot state definitely how I will vote upon the report of the committee until I know what that report is to be be, yet it is more than probable that I will support it unless it is radically defective."

Charles N. Clark, Hannibal, Mo: "Yes; most assuredly. I am in favor of the building of the Nicaragua Canal at once, and the extending of all necessary aid by the general government to secure this end without consulting Great Britain or any other foreign power. Its cost, in my judgment, is a secondary matter. Its importance is difficult to overestimate."

Jo Abbott, Hillsboro, Texas: "No. When the Nicaraguan Canal Co. was before the Fiftieth Congress asking a charter, the company emphatically denied any purpose of asking government aid. This government ought not to set the precedent of granting assistance to corporations operating on foreign soils."

E. S. Minor, Sturgeon Bay, Wis.: "On general principles I am favorable to the improvement of waterways in this country, and am satisfied that all public moneys judically expended in this direction yield quick and liberal returns. The Nicaraguan Canal would be on this American continent, and by right should receive the protection of this government and a judicious amount of financial aid from this government. Let us be Americans for America!"

J. D. Hicks, Altoona, Pa.: "In view of the great advantage to American commerce and American interests, the Nicaragua Canal should, in my judgment, be built by American capital and with government aid and supervision. The United States should then control it not with a view of debarring other nations, but on the principle of 'America for Americans,' which idea grows dearer to the American heart every day. I hope to be able to record a vote for government aid and government control of the Nicaragua Canal."

Thos Updegraff, McGregor, Iowa: "Yes; provided no steal is involved. If a ring of speculators has wormed themselves into the enterprise, no."

Lucien J. Fenton, Winchester, Ohio: "I am disposed to favor government aid in the construction of the canal. In fact, I favor government control of the enterprise. The great commercial advantages which will accrue to the United States on the completion of the canal are easily foreseen. It should be under the control of the government of the United States for reasons obvious to all patriotic Americans."

Robert G. Cousins, Tipton, Iowa: "So far as I am advised upon the subject, I have thought favorably of the Nicaragua Canal project. But the government's financial condition and other circumstances may have to be considered, as well as the committee's report."

James E. Watson, Rushville, Ind.: "Yes."

L. M. Strong, Kenton, Ohio: "Yes."

Alexander M. Hardy, Washington, Ind.: "I will favor government aid for the completion of the Nicaragua Canal, the United States to exercise control over the same, and a protectorate over Nicaragua if necessary."

T. C. Catchings, Vicksburg, Miss.: "The canal should be built by the government, and a special treaty or negotiation with Nicaragua should be made for that purpose."

W. E. Barrett, Melrose, Mass.: "I am in favor of the building of the Nicaragua Canal by the government of the United States, providing it shall first obtain such control of the territory to be used as will insure that it shall be a United States canal on practically United States territory. I am opposed to any subsidy to any private corporation."

Walter Evans, Louisville, Ky.: "I am favorably impressed with the literature I have seen on the subject, but have reached no definite conclusion."

E. S. Henry, Rockville, Conn.: "While strongly favoring the construction of the Nicaragua Canal, should not now care to commit myself to supporting the report of the special committee."

John W. Maddox, Rome, Ga.: "I have not given the subject that investigation that would justify me to commit myself either for or against this measure."

Charles F. Buck, New Orleans, La.: "I am unable to express an intelligent opinion or form a decision for which I would like to be responsible. My inclination tends towards favoring the project, and, with proper safeguards, might favor government aid."

J. C. McDearmon, Trenton, Tenn.: "I have not given the matter sufficient investigation to enable me to determine whether I shall vote for government aid to this enterprise or not."

L. Fletcher, Minneapolis, Minn.: "In the past session I favored the House bill. I cannot say what I will do until I hear the report and see what the bill presented to Congress contains."

F. C. Layton, Wapakoneta, Ohio: "I cannot now say; am undecided. As a rule I am opposed to all 'government aids,' but in view of the vast importance of the proposed canal to our commerce and our country, I might make this an exception, under certain safeguards, etc., but will withhold my opinion, etc., until I am fully informed as to all the details, etc."

Fred C. Leonard, Coudersport, Pa.: "I have not given the matter any especial consideration, and therefore do not care to express myself either way. Will do what I think is right when the time comes to act."

S. S. Turner, Front Royal, Va.: "I have no such matured views on either question as to warrant their publication at this time."

John F. Fitzgerald, Boston, Mass.: "Have not given the matter sufficient study to determine whether the government should lend its aid to this project."

J. C. C. Black, Augusta, Ga.: "With every disposition to accommodate, I prefer not to be interviewed at this time."

J. W. B. Corliss, Detroit, Mich.: "My action will be based upon the facts and information that I may have at the time."

P. D. McCulloch, Marianna, Ark.: "I am not prepared to express an opinion on this subject at present."

S. S. Kirkpatrick, Fredonia, Kans: "I will favor extending government aid to the building of the canal, with proper restrictions. We should by all means have the two oceans connected, and the United States must take the matter in hand and see that it is constructed. I prefer to aid some company rather than have it constructed under direct government supervision."

Jno. E. McCall, Lexington, Tenn.: "I should not like to commit myself on this proposition until I am more fully advised as to the facts."

C. A. Sulloway, Manchester, N. H.: "I think that as a nation we are of age, twenty-one, and in business for ourselves. I shall favor whatever I think is for our best interest as a people. To all others I would say hands off."

Case Broderick, Holton, Kans: "I may if the rights of the government can be properly protected."

T. E. Burton, Cleveland, Ohio: "Yes."

Matthew Griswold, Erie, Pa.: "In general terms will say that I favor the Nicaragua Canal controlled by the people of the United States in some way, and I shall favor any measure that will seem to accom-

plish the building and its control by this government."

Irving P. Wanger, Norristown, Pa.: "In my judgment the construction of the Nicaraguan Canal is of the utmost importance to the commercial interests of the United States, and, if at all feasible, the work should be pushed to completion at the earliest practicable date and at the lowest cost. These results can probably be attained only by government aid, and the furnishing of the same seems to be a patriotic duty."

F. E. Downing, Virginia, Ill.: "If the committee makes a favorable report, clearly showing the practicability and feasibility of a through-cut ship canal, I believe that the great benefit it would be to direct trade between this country and Europe should entitle it to some government aid."

John J. Jenkins, Chippewa Falls, Wis.: "I prefer to know what is contained in the report before I express an opinion either for or against it."

Josiah Patterson, Memphis, Tenn.: "I have always been, as you know, in favor of the construction, if practicable, of a canal across the Isthmus of Darien. My judgment has been that the proposed Nicaraguan Canal was practicable, and in the event the committee appointed by Congress should make a favorable report as to the feasibility of the project, and the limitations are reasonable, I will favor government aid looking to its early completion."

Geo. E. White, Chicago, Ill.: "I am not conversant enough with this matter to answer your questions intelligently, but intend to give it attention enough to be thoroughly posted on it by the time Congress is called upon to act, or when it comes before Congess for action."

George W. Steele, Marion, Ind.: "I would not like to commit myself to vote 'on account of the report that is expected to be made on the feasibility of the Nicaragua Canal soon after the assembling of Congress.' In the first place, on account of the showing made by Senator Turpie, of this State, and one or two other gentlemen, it will require substantial information to overcome the doubt in my mind as to the feasibility of the undertaking; and lately I have seen statements wherein a doubt has been expressed as to whether or not there will be half enough tonnage at a reasonable toll to pay the necessary running expenses of the canal were it completed, saying nothing of the interest on the investment or unexpected expenses that must occur. I am, however, favorably inclined to the undertaking if it is at all feasible."

George Otis Draper, Hopedale, Mass.: "General Draper is in Europe and will not return before November. I am certain that he is favor of a canal, as he made a speech to that effect in the House last winter."

John S. Williams, Yazoo City, Miss.: "Yes; *con amore*."

O. L. Miller, Kansas City, Kans.: "Yes. This answer to your question is given upon the condition that the aid is granted in such manner that the control of the canal shall always remain in the United States."

J. Wheeler, Wheeler, Ala.: "Under the conditions suggested, I shall favor a properly-guarded bill to aid this enterprise."

A. L. Hager, Greenfield, Iowa: "I am strongly in favor of the construction of the canal, and will favor government aid if satisfied with the protection the bill offered gives to the government."

H. D. Money, Carrollton, Miss.: "I would favor government aid if it is shown to be necessary. It would depend largely upon the bill which gave the aid."

E. E. Meredith, Manassas, Va.: "I probably would, though I have not fully made up my mind."

J. K. Jones, Washington, Ark.: "I don't think government aid ought to be given to any enterprise. If the government is to furnish the means to build the canal, it had best build it."

Thos. C. McRae, Prescott, Ark.: "I do not care to discuss the matter until after the report of the committee."

Richard Bartholdt, St. Louis, Mo.: "I favor the early construction of the Nicaragua Canal by the government itself."

S. B. Cooper, Woodville, Texas: "I shall favor the Nicaragua-Canal scheme if the government of the United States has exclusive ownership and control of the same."

Jno. C. Bell, Montrose, Colo.: "I favor United States control and building of canal. Don't care to give any subsidy to private corporation, without United States ownership or control at least."

J. Frank Hanley, Williamsport, Ind.: "Yes. I am heartily in favor of a broader national life. We are not living up to our opportunities so long as we fail to construct and control the Nicaragaun Canal. To permit this waterway to be constructed and controlled by any government other than ours would be trifling with our own destiny."

J. D. Clardy, Newstead, Ky.: "I have recently examined a model of a surface elevation of this canal; have not fully made up my mind about it; but do not think I would vote aid by the government, unless the government actually owned and controlled the canal."

J. G. Spencer, Port Gibson, Miss.: "Would not commit myself, pro or con, until fully inquired into. I fully favor a canal as a progressive step, but, except under most favorable conditions, am prejudiced against government aid."

W. A. Calderhead, Marysville, Kans.: "I favor the early construction of the Nicaragua Canal by the United States. The United States are no longer a provincial people on the frontier of civilization. We are one of the great nations and powers of civilization, and owe it to mankind to open every highway of commerce and avenue of industry to provide means for the support of those who are yet to dwell here."

Joel D. Hubbard, Versailles, Mo.: "Yes; probably."

L. F. Livingston, Kings, Ga.: "I am decidedly in favor of the construction of the canal, whether by the government in part or in whole. We must control it when completed. My opinion is that Congress should do whatever is necessary to be done to secure its construction and final control."

W. M. Denny, Scranton, Miss.: "Yes."

H. W. Ogden, Benton, La.: "Yes. I favor the construction, ownership and management of the Nicaraguan Canal by the United States government alone. I believe it will prove of the greatest possible benefit to the agricultural, manufacturing and commercial interests of the United States. I will not, however, favor government aid if the canal is to be built or controlled by any private corporation."

Grove L. Johnson, Sacramento, Cal.: "Yes. I am in favor of the canal. I will do all that I can to have it constructed. I can see no reason why all parties should not unite in this and forget politics in working for the good of the nation."

Watson C. Squire, Seattle, Wash.: "I am strongly in favor of the Nicaragua Canal, believing it to be one of the most important measures."

Jno. Avery, Greenville, Mich.: "If the project for building the Nicaraguan Canal is considered feasible, as I believe it will be, I am in favor of granting government aid to the extent that will ensure its construction, and under such conditions as will place it under government control and prevent any jobbery in its construction. I am also in favor of the United States acquiring and maintaining defensive positions on the great highways leading to it from the east and the west."

John M. Allen, Tupelo, Miss.: "If the canal committee should report a feasible plan that is not too expensive, I would favor government aid. I think it a great scheme if it can be freed from jobbery and is feasible at reasonable cost."

Jas. McLachlan, Pasadena, Cal.: "I will."

The Isthmian Canal Again.

By Courtenay De Kalb, School of Mines, University of Missouri.

In the MANUFACTURERS' RECORD of October 11 appears an article on "The Isthmian Canal," which I have read with interest, but with disappointment. The author, Mr. Caracristi, displays an amount of knowledge of the diplomatic questions relating to a transisthmian waterway which enables him to arrive at conclusions which, unfortunately, few Americans are able to fully appreciate. I wish to emphasize the fact, very clearly shown by Mr. Caracristi, that the Clayton-Bulwer treaty is un-American, and stands as a menace to our freedom of action in Central America. It is one of the most atrocious blots upon our diplomatic history, and discredits our intelligence. It was approved by our Senate under a misapprehension of its significance, and is sufficiently ambiguous to permit Great Britain to exercise functions in Central America, under cover of its terms, which are in direct contravention of the intention of the treaty, as held by those of our statesmen who were concerned in framing it. Our hands have been tied by it, and even Mr. Caracristi, with all his knowledge of the situation, fails to see that the express stipulations of this document crush his own argument in favor of adopting the route across Panama. Although our treaty with Colombia does extend to us a virtual protectorate over the Isthmus of Panama, we have traded away our birthright for a mess of pottage by the Clayton-Bulwer treaty. There is no little subtlety in the argument advanced, that as the extension of a joint Anglo-American protectorate over "any other practicable communication * * * which connects North and South America" must be done "by treaty stipulations," it should therefore refer to *future* treaties, and not affect subsequent ones. But this interpretation breaks down in view of the further statement in the Clayton-Bulwer treaty that this general principle of protection is to apply "especially to the interoceanic communications, should the same prove to be practical, whether by canal or railway, which are now projected to be established by the way of Tehuantepec or Panama." Thus, by our later act we deliberately, in the most unambiguous terms, threw away our special rights in the United States of Colombia. It simply shows more clearly what a disgraceful piece of business this Clayton-Bulwer treaty was.

Mr. Caracristi's chief contention seems to be that, granting even that all other things were equal, we should prefer the Panama enterprise, because of our protectorate established there, which makes the Panama Canal "an American canal pure and simple." I have shown that this is not true, but that as soon as we should undertake to build the canal at Panama we would find our old bugbear—the Clayton-Bulwer treaty—standing grimly in the way. This, consequently, equalizes the diplomatic situation with respect to the rival locations for a canal. When we come to deal seriously with the diplomatic side of the question we have open to us two courses. One is to abrogate the Clayton-Bulwer treaty in a straightforward and manly way. This means, however, to reopen the old Mosquito question, for England would, of course, fall back upon her former contention, that the abrogation of this treaty would restore to her all her former arrogated rights and pretensions; that is to say, she would insist upon a re-establishment of her protectorate over Mosquitia, and perhaps even of a reversion to her authority of the Bay Islands (the Ruatan-Bonacca group), off the north coast of Honduras. She would, following out this contention, also be in a position to reassert Mosquitian rights to territory down to and including the Rio San Jaun, the eastern entrance of the proposed Nicaraguan Canal. Hence, to abrogate the Clayton-Bulwer treaty we would require a strong fleet in Nicaraguan waters, and would need to be ready to meet serious diplomatic emergencies with Great Britain.

The alternative course would be to go ahead with the canal in Nicaragua regardless of the treaty. We could legitimately contend that since we have a treaty with Nicaragua (the Dickinson-Ayon treaty of 1867) guaranteeing all that was demanded by the Clayton-Bulwer treaty, and that since Great Britain also has a commercial treaty with Nicaragua of the same tenor, the requirements as to the guaranteeing of neutrality "by treaty stipulations" have been complied with by each of the high contracting parties, and that hence we are free to build the canal in conformity with those existing stipulations.

The remainder of Mr. Caracristi's article deals with an argument on the engineering side favoring Panama, which needs no further discussion. The American people have data furnished by trustworthy engineers, upon which they are justly willing to rely that point to the entire feasibility of the Nicaragua Canal within economical limits of cost. Mr. Caracristi states his opinion, evidently based upon considerable personal knowledge of the two routes, and he favors Panama. I have also studied the two routes carefully, and as an engineer, I have come to an opposite conclusion. The difference between the control of the sudden stupendous floods of the Rio Chagres and of the risings of the Rio San Juan, regulated as they are by the Lake of Nicaragua, is so great that the problems are entirely dissimilar. Discussion of this sort, however, is utterly unnecessary, for the effort to arouse an interest in the Panama Canal among the American people would prove absolutely hopeless. They have reason to believe in the practicability of the Nicaragua Canal, and that is the canal they propose to build.

THE British steamship Oceana, which loaded at the Champion Compress, in Wilmington, N. C., cleared on the 16th inst. from that port for Liverpool, England. Her cargo consisted of 10,846 bales of cotton, weighing 5,355,940 pounds and valued at $482,000.

HARPER'S MAGAZINE for November contains: "St. Cecilia" (fragment), from the design by F. S. Church for the Grand Rapids Saint Cecilia Society; engraved by Frank French—frontispiece. "Men and Women and Horses"—a story, by Brander Matthews; four illustrations by W. T. Smedley. "The German Struggle for Liberty," by Poultney Bigelow; five illustrations by R. Caton Woodville and Otto H. Bacher. "A Pilgrim on the Gila"—a story, by Owen Wister; two illustrations by Frederic Remington. "Literary Boston Thirty Years Ago," by Wm. Dean Howells. "Personal Recollections of Joan of Arc"—Part VIII, by Louis De Conte; four illustrations from drawings by F. V. du Mond and a painting by Lenepven. "Hearts Insurgent"—a novel—Part XII (concluded), by Thomas Hardy; illustration by W. Hatherell; engraved by F. Florian. "Recent Impressions of Anglo-Indian Life," by Edwin Lord Weeks; twelve illustrations by Edwin Lord Weeks. "A Thanksgiving Breakfast"—a story, by Harriet Prescott Spofford. "Out of the World at Corinto," by Richard Harding Davis; five illustrations by T. de Thulstrup, G. W. Peters, and a photograph. 'Plumblossom Beebe's Adventures"—a story, by Julian Ralph; six illustrations by C. D. Weldon.

RAILROAD NEWS.

[A complete record of all new railroad building in the South will be found in the Construction Department, on page 201.]

The Central Reorganization.

Under the reorganization now in progress the Central Railway of Georgia is to be entitled the Central of Georgia Railway Co. A charter has been secured for the main stem from Savannah to Atlanta and for the branch road from Gordon to Milledgeville. The capital stock is placed at $5,000,000, and the incorporators are Samuel Thomas, Thomas Ryan, the purchasers who have been associated with themselves; Henry Crawfard, of Illinois; R. L. Anderson, of New York, and five Georgians, Beverly W. Wrenn, Jr., Samuel T. Weyman, George W. Conners, Hanson W. Jones and William T. Toomer. The board of directors have chosen the following officers: R. S. Anderson, vice-president; Henry C. Crawford, general counsel, and W. A. C. Ewing, treasurer. It is generally understood that Mr. H. M. Comer is to be president of the company. It is understood that the Central Railroad Bank at Savannah, operated by the company, will have no connection with the new organization.

The Guyandotte Valley Road.

A dispatch from Huntington, W. Va., announces that the gentlemen interested in the proposed railway line from Huntington through the Guyandotte valley to the Virginia line, have perfected their plans and have completed the organization of the company. The title is to be the Virginias Railway Co., and the capital stock is to be $7,500,000.

A resolution was passed providing for the issue of bonds to aid in the construction of the road, and another authorizing the president of the company to execute the contract with Gen. W. G. Dacey, of New York, a representative of the company recently organized in New York for the purpose of constructing the road.

C. W. Smith, of Chicago, formerly general manager of the Chesapeake & Ohio, and lately vice-president of the A. T. & S. road, was elected president; J. L. Caldwell, vice-president; Robert Avery, secretary; C. W. Campbell, assistant secretary.

As already stated in the MANUFACTURERS' RECORD, this line is one of the most important yet projected in the South. It intersects one of the most valuable coal and timber sections, and when completed will be fully 200 miles in length, giving an outlet to market to a territory as yet without transportation facilities. The gentlemen interested are fully capable of carrying out the project, and are men of unquestioned standing and responsibility, as will be seen by the names of the directors, who are as follows: C. W. Smith, J. L. Caldwell, John Holt, C. W. Campbell, J. B. Benson, Major J. Hotchkiss and C. A. Stebbins.

Increase in B. & O. Earnings.

The Baltimore & Ohio Company annunces that its earnings for the six months ending June 30, 1895, have been sufficient to warrant it in declaring a dividend on common stock of 2½ per cent. The directors, however, have issued the following statement:

"The directors, in view of the very recent revival in railroad business and rates and the consequent propriety of adhering to a financial policy of the utmost conservatism, do not consider it wise to distribute, at present, any portion of the earnings to the stockholders, and, therefore, do not at this time declare a dividend upon the common capital stock. The net earnings for the twelve months ended June 30, 1895, applicable to a dividend upon the common stock, amounted to over 2½ per cent. after the deduction of all charges of every description, including dividends upon preferred stock, cash sinking funds and car trusts."

The board declared the customary semi-annual dividend of 5 per cent. on the stock of the Washington branch on the business of that branch for the six months ended September 30, 1895.

Peninsular Construction Co.

The Peninsular Construction Co. of Baltimore, which is promoting the road from Queenstown, Md., to Lewes, Del., is making rapid progress with its terminals on Chesapeake Bay.

Sanford & Brooks, who are building the wharf and pier, will soon complete their work. The pier will extend 900 feet into the water. At its outer end it will be 100 feet wide and at the shore end will be 60 feet wide. Three railroad tracks will run out on the pier, and a two-story warehouse, 30 by 180 feet, will be built there. A transfer slip is also included in the terminal plans, as it is contemplated to carry cars with freight in bulk between Baltimore and Queenstown. The property owned by the railroad company embraces 200 acres of land fronting navigable water on Chester river and Queenstown creek for about a mile.

Mobile & Ohio Report.

The annual report of the Mobile & Ohio, recently issued by President J. C. Clarke, shows that the system is in a very satisfactory condition under its present management. The gross receipts for the year ending June 30, 1895, were $3,269,989 68. Deducting operating expenses, taxes, etc., a surplus of $1,115,502.95 is left. Deducting fixed charges, a balance of $81,149 16 is left. During the year the company paid its entire floating debt and spent nearly $250,000 for new rolling stock and in repairs. Speaking of traffic, Mr. Clarke says:

"The cotton traffic shows an increase of 18 per cent. in tonnage. The low price at which the crop was marketed, however, greatly reduced the purchasing power of the planters as compared with the preceding year, which accounts for the decrease in other freights.

"The tropical-fruit business via Mobile during the year was satisfactory. The rapid increase in this business since its encouragement by the Mobile & Ohio Railroad Co. has resulted in making the imports of bananas via Mobile the third in volume of all the ports of the United States." As an indication of the growth of this fruit business, the freight revenue from it during the year aggregated $200,613.05, an increase of nearly $40,000 over the previous year.

Illinois Central Officers.

The Illinois Central Railroad Co., at its annual meeting held in Chicago, indorsed the policy of the present management by re-electing the present officers, who are as follows: Stuyvesant Fish, president; J. C. Welling, first vice-president; J. T. Harahan, second vice-president; A. C. Hackstaff, secretary; E. L. H. Gibson, treasurer; B. F. Ayer, general counsel; James Fentress, general solicitor.

A Plant System Celebration.

The employes of the Plant system of railway and steamship lines will have an elaborate demonstration at Atlanta on October 28, when Mr. Henry B. Plant, president and organizer of the system, is to be specially honored. The exercises will include a parade through the city to the exposition grounds and a meeting at the Auditorium. A silver service to be used in his private car will be presented Mr. Plant by the employes of the railway lines in the system, a marine glass by the Southern Express Co. and a compass by the steamship lines. Traffic Manager Wrenn will select the silver service and compass and Major O'Brien the marine glass. A permanent organization will be formed, and the 28th of October celebrated every year.

Street Railroads of Georgia.

Street-railway development in Georgia is strikingly indicated by the recent report of the State railroad commission. According to the report, Atlanta leads the other cities of the State, having twice as many miles of street railroads as any other city. The Consolidated Street Railroad Co. has sixty-two miles of road, assessed at $553,360; the Atlanta Railway Co. has seventeen miles of track, assessed at $26,550, and the Collins Park & Belt Railroad Co. has nine miles, assessed at $51,200, making a total of $631,110 worth of street railroads in Atlanta. Savannah has forty-five miles of street railroads, assessed at $426,072; Augusta has twenty-two miles, assessed at $159,800; Macon has nineteen and a-half miles, assessed at $323 502, and Columbus has twenty-six miles, assessed at $110 350.

Railroad Notes.

THE Houston & Texas Central has added nine new locomotives to its rolling stock.

MR. A. W. SWANITZ has been appointed general manager of the New Orleans & Western road.

MR. WILLIAM HAWN, of Chattanooga, has been appointed auditor of the Central of Georgia Railway Co.

THE stockholders of the Nashville & Decatur Railroad at their annual meeting re-elected the present board of directors and officers.

MR. HENRY WOOD has been appointed acting general manager of the Choctaw, Oklahoma & Gulf Railway, with headquarters at South McAlester.

A DISPATCH from Augusta, Ga., states that the Wagner Palace Car Co. is arranging to extend its service into the South, and will shortly put on a sleeping and chair-car line between Atlanta and Charleston by way of Augusta. This will be the first entrance of the Wagner Company into Southern territory east of the Mississippi. The sleeper will leave Atlanta by the Georgia road, and will go through to Charleston.

THE Boone railroad scheme of East Tennessee, with its wild and absurd statements, is now seeking additional publicity by means of long letters to the papers claiming that the criticisms of the MANUFACTURERS' RECORD are for the purpose of pleasing the Southern Railway Co. or to blackmail the Boone scheme for advertising. This is the usual line of argument of such people. It is hardly necessary to answer such rubbish, but possibly it may be proper to say in plain and simple language that such statements are lies, begging the indulgence of our readers for using such language. If the people of East Tennessee are satisfied to become entangled in such schemes, well and good. The MANUFACTURERS' RECORD has no concern one way or another, now that it has performed its duty to the public of pointing out the absurdity of the many statements put forth. A railroad from the coalfields via Knoxville to Port Royal has often been urged by the MANUFACTURERS' RECORD as one of the most important unoccupied routes in America, and the MANUFACTURERS' RECORD's only interest is to prevent an enterprise of such possible value being destroyed by wild promoters without financial backing.

THE publishers of McClure's Magazine have undertaken a very important art enterprise, which is now possible with the introduction of enamelled paper in the magazine. They sent the famous artist, Mr. Will H. Low, to Europe to collect photographs of the 200 most important paintings made in this country. The results of Mr. Low's travels in Europe will be supplemented with the most important work of American artists, and the pictures will appear in the magazine with text by Mr. Low.

FINANCIAL NEWS.

New Corporations.

Mr. L. E. Munford is preparing to open a bank at Cape Charles, Va., and is constructing a building for it.

The Security Bank has been incorporated at Fredericktown, Mo., with $10,000 capital. E. D. Anthony and J. L. Settle are interested.

The Norfolk & Portsmouth Insurance Co. has been organized in Norfolk, Va., by the election of John L. Roper, president, and C. S. Sherwood, vice-president.

The First National Bank of Alexandria, La., has opened for the transaction of business with Thos. Clements, president; B. Ehrstein, vice-president, and A. Wettermark, Jr., cashier. The capital stock is $50,000.

A bank was organized at Sacramento, Ky., with a capital stock of $15,000, known as the Sacramento Deposit Bank. The following officers are to be in charge: George W. Martin, president, Sacramento; J. L. Stinnett, vice-president, Whitesville, and F. P. Stum, cashier, Fordsville. Business will begin February 1, 1896.

The Continental Permanent Building and Loan Association has been incorporated at Baltimore by William M. Maynadier, Henry S. Maccubbin, George K. Hutchins, John W. Smith, Thomas M. Skiles, George W. Bennett, Byron H. Coy, William S. Norris, Peter T. McAuliffe and Arthur D. Foster, with a capital stock of $130,000.

Interest and Dividends.

The Libbey Manufacturing Co. of Augusta, Ga., has declared a dividend of $3 per share.

The Mutual Real Estate and Building Association of Augusta has declared a 5 per cent. dividend.

At the annual meeting of the Augusta (Ga.) Real Estate and Building Association a dividend of 5 per cent. per annum was declared.

A charter has been granted to the National Loan and Endowment Association of Washington, D. C. The capital stock is to be not less than $10,000, nor more than $50,000, divided into shares of $20. The following are named as officers: President, Henry C. Terrell; vice-president, Lewis W. Johnson; secretary, A. H. Terrell; treasurer, C. K. Johnson, and assistant treasurer, Samuel Ridley.

Immense New Turbine Plant.

The Niagara Falls Hydraulic Power & Manufacturing Co. recently contracted with James Leffel & Co., of Springfield, Ohio, for four of their improved double-discharge horizontal-shaft water-wheels, to be of 8000 horse-power capacity, under a maximum head pressure of 218 feet, which is by far the highest head under which turbines of large capacity have ever been applied in this country or elsewhere. These wheels will drive eight electrical generators, which will be connected direct to the horizontal turbine shafts without gears or belting, the wheels and generators all running in vertical planes. This is the second large order for turbines built by James Leffel & Co. for Niagara Falls, there being already several of this make of wheel, each of 1200 horse-power, in daily operation in the Cliff Paper Co. mills, located at the cliffs near the tunnel. This water-wheel firm is also building four of its Cascade wheels for one company, to be operated under 730 feet head, part of the power to be electrically transmitted by connecting the wheel-shaft directly to the generators. The Cascade wheel is, however, essentially and entirely different in construction and operation from the turbine, being in principle an impulse and reaction wheel. This Cascade-wheel plant will have an aggregate capacity of 600 horse-power.

SOUTHERN TEXTILE INTERESTS.

[A complete record of new textile enterprises in the South will be found in the Construction Department, on page 200.]

PRODUCTION.

Revolving Flat Cards.

LOWELL, MASS., October 8.

Editor Manufacturers' Record:

When the American manufacturers of cotton goods decided to change their system of carding from double to single, they began to give the subject a thorough investigation. After carefully looking the improved methods of carding over, very many of them decided to utilize the revolving flat card as a medium to secure the desired results. In making this change there was two points that demanded careful attention, namely, the quality and quantity of work done by this card.

It was claimed by the machine builders in England that the English revolving flat card could be set up and made to card from 160 to 200 pounds per day. In advocating this very excessive quantity of carding they used the immense carding surface as a basis for their argument. Their point was so strongly advocated that many New England manufacturers ordered the revolving flat card, and in most cases they were set up and run at a speed of 165 revolutions, carding from 165 up to 200 pounds per day.

In order to fully understand the subject in all of its bearings, it will be necessary to give dimensions and other data in regard to the combinations of speeds and card clothing.

All revolving flat cards, except in a few instances, whether of English or American build, are constructed with main cylinders 50x40 inch face, doffer of 24-inch diameter, 40-inch face, and licker-in 9½x40. The speed of cylinders are 165 revolutions per minute, that of doffers 14 revolutions and that of the licker-in 350 revolutions per minute. The cylinders are clothed with two-inch fillets having a setting of 65,000 points to the square foot; the doffers are clothed with one-and-one-half-inch fillet, with 70,000 points per square foot and the licker-in with steel garnet wire, with 28 points to the square inch.

The carding surfaces are as follows: Main cylinder—3.1416x50x40 divided by 144 equals 43.6 square feet, which, multiplied by 65,000 points per square foot, equals 2,834,000 points on main cylinder, and this multiplied by 165 equals 467,610,000 points passing the bite of the licker-in and doffer every minute. The amount of card in the estimation that I am to present is 200 pounds per day of ten hours; this would be equal to 20 pounds per hour, and this multiplied by 7000 gives us 140,000 grains per hour, which is equal to 2333 grains per minute, and this multiplied by 18,000 fibres, the number contained in one grain, based on the assumption that 7000 grains contains 120,000,000 cotton fibres, gives us a total of 41,994,000 cotton fibres, which, if divided by the number of card teeth, enables us to ascertain how many fibres or fraction of fibres they carry forward from the licker-in to the doffer; thus, 41,994,000 divided by 467,610,000 equals .089 fibre.

Doffer—3.1416x24x40 divided by 144 equals 21 square feet, which, multiplied by 70,000, gives us 1,470,000 points on the doffer; 1,470,000x14, the number of turns of doffer, equals 20,580,000 points passing the carding surface of cylinder every minute. We next divide 41,994,000 by 20,580,000, and in thus doing find that 2 cotton fibres are removed from main cylinder by each card tooth on carding surface of doffer.

Licker-in—3.1416x9.5x40 divided by 144 equals 8.3 square feet. We ascertained in a previous article that the garnet-wire licker-in contained 28 points per square inch; then 28x144x8.3x350 equals 11,712,960 points. Now, then, if we divide 41,994,000 by 11,712,960 points, we shall ascertain the number of fibres that are carried by each point to the carding surfaces; 41,994,000 divided by 11,712,960 equals 3.5 fibres.

Now it must be evident to any observing manufacturer that this excessive amount of carding will never be made a success. These estimates show that the points of teeth on main cylinder carry .089 fibre, on doffer 2 fibres and on licker in 3 5 fibres. In fact, it has become evident to very many of our manufacturers that a mistake has been made, and as a result of this a reaction is taking place. Of course, if any concern wants to turn off anywhere from 1000 to 1200 pounds of carded cotton per week, it can do so, but coarse, rough yarn will be the result. There is a limit to the quantity of work that a revolving flat card should be made to do, that is, if we expect to get good, smooth, strong yarn.

It has become evident to cotton manufacturers that a mistake has been made in trying to run their cards so heavily loaded, and in very many instances the management of mills where the revolving flat card is being placed has decided to make provision for a lighter grade of carding; that is to say, more cards are to be placed in order to offset the difference in carding.

Just to make this point clear I will make a careful estimate from a product of 125 pounds per day. As in the previous estimate, we have 467,610,000 points on the cylinder passing the bite of the licker-in and doffer every minute. The amount of cotton carded is 125 pounds per day, or 12.5 per hour; 12.5x7000 equals 87,500 grains per hour, and this divided by 60 gives us 1458 grains per minute, which multiplied by 18,000 equals 26,224,000 cotton fibres. Now if we divide this by the number of card teeth we find that they carry forward from the licker-in to the doffer .0056 fibre; on the doffer we have 20,580,000 points passing the carding surface of the cylinder every minute, and 26,224,000 divided by 20,580,000 equals 1.2 fibres removed from the cylinder by each tooth on the doffer; on the licker-in we have 13,386,240 points, and dividing 26,224,000 by 13,386,240 we get 1.9 cotton fibres carried from the shell-feed to the cylinder every minute.

We now come to the carding surfaces of the tops. This I consider a very important point to consider, from the fact that the amount of carding surface applied to the tops determines in a very large measure. On a revolving flat card there are 39 top flats working continuously; on each are 35 square inches of carding surface; so that 35x39 equals 1365 square inches, divided by 144 equals 9.47 square feet, and multiplying this by 62,000, number of points contained in each square foot, we have a total of 587,140 points, which is equal to 15,054 87 points on each top flat.

Having discussed at some length the dimensions of revolving flat card with capacity for manipulating cotton fibres, I will now present some valuable hints as to why we should not load our carding engines to such an extent.

Now, it was ascertained that with a product of 200 pounds per day 41,994,000 cotton fibres passed a given point every minute. Each revolving flat, we have just ascertained, contains 15,054.87 points, and the time taken by a revolving flat from the time that it comes in contact with the cylinder until it leaves the carding surface of cylinder is one minute, so that 41,994,000 cotton fibres come in contact with 15,054.87 points on the carding surface of each revolving flat, which is equal to 2789 fibres coming in contact with each point of tooth on a revolving flat.

It must be very evident, from these conditions, that the carding surfaces of revolving flats are very heavily loaded. Another point that it will be of value to consider is the position of the revolving flats when brought in contact with the carding surface of the cylinder. It is a well-known fact that one of the strongest claims made for the revolving flat card is the close setting of the flats. It is stated by the builders of these cards that the revolving flats can be set within the one-thousandth part of an inch from the carding surface of cylinder, although it is safe to assume that they are not set so close. From the seven-thousandth to the eight-thousandth part of an inch would be full close with a card turning off 200 pounds of carded cotton per day.

Let us glance for a moment at the effect upon the carding surfaces of the flats. As previously stated, 41,994,000 cotton fibres come in contact with 15,054 87 points of card teeth on flats. Now, this amount of cotton would be sure to quickly fill the teeth full to their points, and the succeeding flats would receive the same treatment continuously throughout the day. From these conditions, is it not safe to assume that after a revolving flat has become loaded to such an extent, it will not be in a suitable condition to perform the work satisfactory?

The object of the card teeth on the flats is to extract the foreign substances of every description, and in order to do this work in a satisfactory manner there must be plenty of room for the card teeth to seize hold of and retain these substances that manufacturers are so desirous to extract from the mass of cotton fibres as they pass through the carding surfaces. This statement briefly points out why cotton manufacturers are coming to the conclusion that a lighter grade of carding is preferred to a heavier grade.

It has been the opinion of the writer for several years that the carding surfaces of top flats have not received the attention due to them. They are a very important factor in the work of cleansing and straightening out the cotton fibres. But what is to be accomplished when, at the very commencement, the flats are loaded to the points of teeth with cotton fibres full of dirt, such as shell, leaf, sand and other matter? It is evident that with the flats so filled up rough and dirty carding will be the result.

A medium grade of carding on the revolving flat card would relieve the carding surfaces of such a strain, and the cotton fibres as they are delivered to the carding surfaces would be relieved of very much of the foreign substances that are invariably found in all grades of cotton.

The carding surfaces of a revolving flat card can take care of 125 pounds fairly well, but when the attempt is made to go beyond that limit the quality and strength of the yarn spun will deteriorate, while the quality of cloth woven will be noticeably inferior. The question of short drafts will necessarily follow the adoption of light grades of carding. As this subject is of special interest to manufacturers of cotton goods, it will be treated later in this series of articles, as well as other points of interest, such as best methods of ginning, sampling, picking, drawing on and grinding card clothing, draughting, railway heads, drawing, etc., as well as other important points in the spinning and weaving departments.

F. E. SAUNDERS.

Another 20,000 Spindles at Columbia.

Another big cotton mill has been decided on for erection at Columbia, S. C., and plans for building same will be made at once. The new company will organize as the Broad River Cotton Mill Co. with a capital stock of $150,000, and it is probable that Mr. W. B. Smith Whaley, the well-known mill engineer, of Columbia, will prepare the plans, and an equipment of 20,000 spindles will be installed. Messrs. T. A. McCreery, Geo. A. Shields, J. P. Richardson, W. B. S. Whaley and others are incorporators.

The Ada Mill.

The stockholders of the Ada Manufacturing Co., of Charlotte, N. C., held their annual meeting last week and re-elected the old directors and officers. The report of the treasurer was read, showing a surplus of earnings of about 26½ per cent., and it was voted to pay a dividend of 20 per cent. from this, and use the remainder, in connection with an increase of capital stock, to build an addition. The addition is to be equipped with looms for manufacturing the present production of yarn into white goods, and it will cost about $50,000. Mr. M. C. Mayer is president, and J. J. Gormley, secretary.

Cotton Manufacturing in North Carolina in Early Days.

History repeats itself. That this is true is being exemplified before our eyes right here in Greensboro.

Recent enterprises for the manufacture of cotton now going on in this place on a very large scale brings to mind the fact that it was in Greensboro where the business was first successfully inaugurated, and now appearances certainly indicate that here, after lying almost dormant for half a century, it is to be revived on a still larger and grander scale.

To be exact about the matter, an extract is here appended from the North Carolina Reader, by Calvin H. Wiley, edition of 1851. The article was written by Henry B. Elliott, in which he says:

"North Carolina may be said to be the pioneer of the Southern States in the manufacture of cotton. She was closely followed by Georgia, who, by her enterprise, population and wealth, has earned for herself the proud distinction of being called the Empire State, South. The first feeble beginnings in North Carolina were in Lincoln and Edgecombe counties, some thirty-five years ago. But such was the want of skill, the imperfection of machinery and the want of commercial facilities, that they made little impression on the public mind; indeed, their very existence was unknown to nine-tenths of our population. The factory in Lincoln, after struggling through many years of difficulty, has, it is understood, been renovated, and takes rank among similar establishments of modern times. The one in Edgecombe was less fortunate. It was removed to Fayetteville, when it soon ceased to run. Such was the state of our manufactures, 'if state it might be called,' in 1829. In that year, Col. Benjamin Elliott, moved by a spirit of enterprise and a desire for Southern progress and improvement, purchased the site at Cedar Falls, with a view to organize a company for the manufacture of cotton goods. He failed in his laudable purpose. The business was new in the South—the North had the advantage in skill—Southern people would not buy a Southern manufacture—the thing would be a failure, and the capital lost! These considerations deterred men from engaging in it. His agitation of the subject, however, was as 'seed sown upon the waters, to be gathered,' not many days hence, but immediately. Henry Humphreys, Esq., of Greensboro, a gentleman possessing great energy of character and ample means, caught the spirit which had its birth in Randolph, went to work, erected a steam factory in Greensboro, and realized, as he deserved to do, a handsome fortune. 'The ice once broken, more fall into the stream.' Encouraged by this example, Colonel Elliott was enabled to procure the help necessary to erect a small cotton mill at his seat at Cedar Falls, from which small beginning it has grown to its present size."

As to the time Mr. Humphreys started

the business here, notice the language of Mr. Elliott. It was "as seed sown upon the waters, to be gathered, not many days hence, but 'immediately,'" from which it is to be seen that he commenced work in 1829, erecting the Mount Hecla Steam Cotton Mills on what is now North Greene street, about on the exact spot where the new leaf-house of J. H. Whitt & Co. now stands. The building was four stories with basement, dimensions about 150x50, and is yet well remembered by a great number of our people. It was destroyed several years ago by fire.

Here Mr. Humphreys manufactured sheetings, shirtings, osnaburgs and yarns. When in full blast about 3000 spindles and seventy-five looms were operated.

A little retrospect will show that this was a tremendous undertaking in those days, when there were no railroads and everything was in a very primitive state, every part of a building being made by hand.

Mr. Humphreys was the grandfather of the late H. H. Tate and J. Turner and Charles Tate, of this place. That the old gentleman was methodical in the extreme in his business matters is attested by the fact that he kept carefully filed away every paper of any importance he ever received, and these are now in possession of his descendants.

Yesterday a Record man was permitted to examine many of them. Notwithstanding their age, each document is extremely legible. From a receipt from John Lippert & Co., of Fayetteville, it is seen that he was engaged in buying cotton in March, 1827, this being the date of the document in which the receipt of fifty dollars is acknowledged. Another paper of even date also shows the price of cotton on the Fayetteville market to have been "from 8½ to 8.61, as per sales this day made," and the prevailing price for the past fortnight was from 8¾ to 8.37.

The machinery for Mr. Humphreys's plant was purchased in Paterson, N. J., and Pittsburg, Pa., and was transported from New York by sailing vessels to Petersburg, Va., and Wilmington, N. C., from which places it was hauled by wagons to Greensboro. Think of such an undertaking at this time!

All the facts relative to the purchase and prices paid for this machinery is found among Mr. Humphreys's papers.

It is also seen that he settled for a great part of these goods in cotton, a credit of $12,000 being found in one bill.

James Danforth, of Paterson, N. J., was the first superintendent. The mill was operated by Mr. Humphreys till his death, which occurred March 26, 1840, at the age of fifty-three years. After his death the mill was run by his son-in-law, the late T. R. Tate, till the year 1850, when the machinery, etc., was removed to the Catawba river, in Gaston county, N. C., and new machinery for the manufacture of both cotton and wool was added.—Greensboro (N. C.) Record.

Textile Notes.

THE Sibley Manufacturing Co., of Augusta, Ga., has declared a quarterly dividend of 3 per cent.

THE Salisbury Cotton Mills, of Salisbury, N. C., has declared a third quarterly dividend of 2 per cent.

THE King Manufacturing Co., of Augusta, Ga., has declared an extra dividend of 2 per cent., making 8 in all for the year.

THE new Mayoden Cotton Mills, near Madison, N. C., has ordered 8400 spindles for producing hosiery yarns. This machinery will be put in at once and started running.

THE Crown Cotton Mill at Greensboro N. C., which has been idle for several years, will be put in operation by D. W. C. Benbow. The plant has 5000 spindles and will employ 100 operatives.

THE Afro-Alabama Cotton Mill Co., of Anniston, Ala., chartered with Wm. J. Stevens, president, has placed its capital stock at $100,000. It is proposed to erect a cotton mill for the employment of negro operatives only.

THE proposed People's Cotton Factory, at Montgomery, Ala., is being pushed to success. The capital is proposed to be $200,000, and $100,000 of this has already been subscribed. The Commercial and Industrial Association has the matter in charge, and organization will be effected at once.

THE Meridian Co-operative Cotton Mills Co., of Meridian, Miss., has been formally organized and elected Mr. A. H. George, president; L. A. Duncan, vice-president, and C. F. Woods, secretary. The capital stock is to be $12,500. It has been decided to establish a knitting mill at once, and at an early day add cotton-yarn machinery.

New England at Atlanta.

Referring to the papers to be read at the Atlanta meeting of the New England Cotton Manufacturers' Association, the Worcester Spy says:

"Two of these essayists, Mr. Atkinson, of Boston, and Mr. Edmonds, of Baltimore, have laid the South under obligations greater than it will ever be able to repay. The first originated the idea of the Cotton Exposition of 1881, and while it was in progress he made a practical talk to a large assemblage of cotton dealers, millmen and planters, which teemed with suggestions of the changes that must be made in the old uneconomic systems of cultivating, ginning and baling, to enable the South to retain its ascendency as the chief supplier of cotton to the world. The great economic improvements and many inventions already made in the handling of cotton and preparing it for market are the fruits of those suggestions. The recent invention for compressing cotton and running it in sheets in a cylindrical bale, and taking from it samples before covering it with an osnaburg wrapper, will eventually revolutionize the entire system of cotton handling, for it will save the planters from falling into the hands of another jute monopoly and relieve them of the necessity of buying hoops and clasps, this last alone amounting to a saving of at least $1 a bale, or, for an average crop, a saving to the entire cotton belt of from $7,000,000 to $8,000,000 annually. More than this, the new sampling system will prevent the enormous waste of the old method, and will enable ginners in every community to guarantee that the contents of every bale will conform to sample. The same invention will materially reduce the cost of transportation and the rates of insurance. All this, originally suggested by Mr. Atkinson, was studied by ingenious men, who finally worked out the problem and built the machines that will accomplish these results.

"To Mr. Edmonds, editor of the MANUFACTURERS' RECORD, the South is indebted for very much of its splendid development. Soon after the exposition of 1881 he determined that its lessons could best be taught by the establishment of an industrial paper that should exploit its resources and supply weekly reliable information of its progress. From small beginnings he built up the influential journal which has subscribers all over the Union, and in the chief commercial cities of Great Britain and the Continent. Through his persistent endeavors the New England Cotton Manufacturers' Association was induced to hold its meeting at the exposition at Atlanta.

"It is not too much to anticipate that the outcome of the meeting next week will eventually be a thoroughly good understanding between all cotton interests, North and South, that will inure to the benefit of all connected with every form of this great American industry."

COTTONSEED OIL.

This department is open for the full and free discussion of trade topics and practical questions, and contributions are invited from men who are identified with this industry. Items of news are always acceptable.

The Market for Cottonseed Products.

NEW YORK, October 22.

Although the controlling conditions of the cotton-oil market are practically unchanged, a noteworthy feature consists in an advance in the various grades of oil. The established figures now current are firm, notwithstanding the declining lard market, Chicago quotation for January lard being 5.67 cents, the lowest yet reached, the increasing hog receipts being directly responsible for the depression. Increased bids from crushers, in numerous instances, fail to procure adequate seed supplies, while crude oil made from high-priced seed, with the added expense coincident to repeated shut-downs by reason of said insufficient supplies, demands a correspondingly augmented price, the alternative being an inevitable loss. Crude is therefore held in certain locations at 21 cents, although a fractional concession would doubtless be made in view of substantial scales. Owing to the peculiar conditions which encompass the trade, it needs not a remarkable prescience to foretell that unless unusual care is exercised in the retrenchment of running expenses when practicable, and analogous economical principles pursued in the respective manufacturing operations, when needful, the manufacturer's prospect of coming out "whole" at the termination of the season must be characterized as being decidedly problematical. The lard and tallow markets being depressed by low values concurrently, exert a deteriorating influence on oil distribution, if not on prices of the latter. Exports to Holland have been unusually light not only during the week just closed, but also during the several preceding months. The arrivals of American cottonseed oil in Holland during the month of September aggregate 375 barrels, as compared with 23,480 barrels during the same month of the previous year. The arrivals of English oil in Holland during September aggregate 847 barrels, as against 1080 barrels during the same month of 1894. Shipments to England and other European consuming centres have also been of an unimportant character. Prime old oil, summer yellow, is on offer at 28 to 28½ cents, the quotations of the off grades being of a fluctuating character. Bulk crude is on offer in a moderate way at 20 cents, although bidding falls short of this basis, light trading being the result. Of prime yellow, old and new, for prompt and future delivery, sales amounting to 150,000 gallons were reported for the week at 28 cents, and 28½ cents for distinctly prime, together with 25,000 gallons of off-grade yellow at 27 to 27½ cents, inferior qualities of the latter being sold in a moderate way at correspondingly reduced quotations. Exports aggregate 2700 barrels, a large proportion of which was destined for Marseilles. Prime crude, loose, is quoted at 18 to 21 cents; barrelled, 24 to 25 cents; prime summer yellow, 28 to 28½ cents; off summer yellow, 27 to 27½ cents; butter oil, 29 to 30 cents; white oil, prime, 31 to 32 cents, and soap stock, 1 1 16 cents. A good demand for prime crude obtains in Chicago at 22 cents.

Cake and Meal.—No receipts are reported at this market, nor export shipments from any of the shipping points. Considerable interest is displayed abroad concerning the prospective cake output during the present season. It is now certain that the export trade will not reach its maximum development until the middle of November. The abundant supplies of cake and meal placed on the foreign markets in 1894-95 at a low range of prices cannot be repeated this season. Violent climatic changes abroad have caused an improved inquiry concerning American cotton cake. American cake is quoted on the Liverpool market at £4 10/ to £5 7/6 for inferior to really choice soft descriptions. Owing to the heavy seed receipts at Alexandria, oil and cake values in England dropped slightly, imports to London, however, from January 1 to October 1 being materially less than those of the same period during 1894, as evidenced by the following figures: For the first nine months of 1894 48,675 tons of seed were imported from Alexandria to London, against 36,089 tons covering the same period of the present year. Market quotations for cake and meal are unchanged.

Cottonseed-Oil Notes.

THE Calhoun Cottonseed Oil Co., of Piedmont, Ala., has been organized with a capital of $100,000. Mr. J. J. Eubanks is president and manager, and Mr. E. W. Eedbetter, secretary and treasurer. A complete outfit of machinery has been purchased, and the mill will soon be in operation.

THE Chattanooga Cottonseed Oil Co., at Chattanooga, Tenn., received last week three carloads of cottonseed. The manufacture of oil was resumed on Monday last with a full force of hands. Several buildings have been erected for storage purposes, and the company expects a good season's business.

AT a meeting of the Jacksonville Oil Mill Co., of Jacksonville, Ala., held last week, the following directors were elected: S. D. G. Brothers, E. F. Crook, Walter Dean, D. E. Puffer and George P. Ide, of Jacksonville; H. H. Tyson, of New York, and L. R. Quimby, of Vermont. At a subsequent meeting the following officers were elected: George P. Ide, president; D. E. Puffer, secretary and treasurer.

THE Houston oil mills advanced cottonseed meal and cake fifty cents a ton last week, and quotations are $11 to $12 f. o. b. at mill. The following quotations were posted by the cottonseed-product department of the Houston Cotton Exchange and Board of Trade: Strictly prime crude oil and prime crude oil, 19 to 20 cents; off crude, 15 to 17 cents; prime summer yellow, 21 to 22½ cents; cottonseed hulls per ton, $2.50 to $3.50. There is a good demand, and prices are firm.

THE market for cottonseed products in New Orleans is steady, with a fair demand and light receipts. The following quotations represent receivers' prices: Cottonseed, $8 per ton of 2000 pounds net to the mills, no commission of any kind to be added; cottonseed meal jobbing at depot, $14 50 to $14 75 per short ton of 2000 pounds; for export per long ton of 2240 pounds f. o. b., $16 50 to $17 for current month; oil-cake for export, $16.50 to $17 per long ton f. o. b.; crude cottonseed oil at wholesale or for shipment for September or October delivery, strictly prime crude in barrels per gallon, 20 to 20½ cents; loose per gallon, 17½ to 18 cents; refined cottonseed oil, prime in barrels per gallon, at wholesale or for shipment, 25 to 25½ cents; cottonseed hulls delivered per 100 pounds, according to location of mill, 15 to 20 cents; foots, 1½ to 2 cents; linters—A, 3⅜ to 3½ cents; B, 3⅛ to 3¼ cents; C, 2⅜ to 2¾ cents, according to style and staple; ashes, none.

THE addition to the Stonewall Cotton Mills, at Stonewall, Miss., will be an entire new and complete mill, and work on it is now in progress. It will cost about $200,000, and will be designed to make a fine grade of Sea Island shirting and sheetings. Power will be furnished by a 500 horse-power Corliss engine, and an electric-light plant, heating, ventilating and air-moistening systems will be put in.

MECHANICAL.

Long-Distance Electric Transmission.

The work of utilizing the great water-powers of the far West is going on rapidly. Within the past month two electrical plants for the transmission of power from waterfalls over long distances have been installed. That at Sacramento, Cal., has proved the feasibility of economically transmitting the power of a fall to a distance of nearly twenty-five miles. That at Portland, Ore., is still more important, and presented many new electrical problems. These have been successfully solved, and the thriving city of Portland is now benefiting by a service of electricity from a waterfall more than twelve miles away.

This installation was made by the Portland General Electric Co., of which Mr. P. F. Morey is president. The company owns the entire water-power of the falls on the Willamette river at Oregon City, twelve miles above Portland, which, with a head of forty feet, has a minimum capacity estimated at 50,000 horse-power. Part of the power has already been utilized by numerous factories and mills erected near by, and in addition to these an electric station erected some years ago has supplied current for lighting the streets and dwellings of Portland and for operating an electric street railway between Oregon and Milwaukee, seven miles away, the direct current and high frequency alternating systems being used.

In order to take advantage of the power of the falls, the Portland General Electric Co. has constructed the first part of an extensive station on the west side of the Willamette river, opposite the city of Oregon. The part constructed is one-quarter only of the building, which is being put up in sections. Twenty sections will complete the building; five are already built, and foundations are now being laid for the remainder. The ultimate generating capacity of the station will be 12,800 horse-power.

In addition to the land covered by the station the Portland General Electric Co. has purchased about 1600 acres in the vicinity. It also controls the canal and locks on the west side of the river, constructed to allow of the passage of vessels past the falls into the navigable waters above, extending seventy-five miles inland. To construct this canal the State of Oregon contributed about $200,000, the balance being supplied by the Portland Company.

The station building is of concrete, stone, iron and brick, and when finished will have a length parallel with the river of 364 feet. The water is taken from the canal, led through an extensive hydraulic installation and discharged into the river below on the other side. The water-wheel plant is from the works of the Stilwell-Bierce & Smith-Vaile Co., of Dayton, Ohio, and consists at the present time of three units, each consisting of a pair of vertical cylinder gate improved Victor turbine wheels forty-two inches and sixty inches in diameter, respectively. The larger wheel is an auxiliary, to be brought into service only at periods of excessive high water, which the records show occur about once in every five years. The smaller wheel runs at a speed of 200 revolutions per minute and the larger at 100 revolutions per minute. Both turbines are set at the same level, and each carries a pulley, that of the 42-inch wheel being fixed to the generator shaft. When the large wheel is in operation the two pulleys are belted together, the smaller wheel is disconnected and the large wheel drives the generator at a uniform speed of 200 revolutions. When the smaller turbine is operated alone the belt lies upon a shelf surrounding the pulleys.

The weight of the vertical shaft, with the armature, is about 33,500 pounds, and to carry this a system of extra bearings is introduced, one of the ring thrust type and the other a hydraulic oil bearing, both supplementing the ring bearings on the armature shaft. They are enclosed in cases filled with oil delivered by hydraulic pressure, and are surrounded by water-jackets.

The length of the generator shaft is twenty-nine feet, and eight and three-eighths inches in diameter. It is not a continuation of the shaft of the wheel, but is coupled to it by means of a disc coupling, which allows of a certain free movement up and down of the generator shaft. The shaft of the 60-inch wheel runs from the coupling to a bearing set in the floor of the station. Both wheels in each section are controlled by hand-wheels, and both are regulated by the same governor. The belt-tightener is also controlled from either floor by a hand-wheel.

The water is admitted to the penstocks from the upper canal by means of a head gate operated from a platform on the canal side of the station. Each penstock is ten feet in diameter, and is constructed of riveted steel plates. Each wheel has its own flume, the water passing first through the large flume of the larger wheel to the flume of the smaller wheel, whence it passes through a tube into the tail-race. In addition to this turbine equipment, an auxiliary power equipment has been furnished, consisting of a set of pumps, including a hydraulic pump for supplying oil to the thrust-bearing cylinders and a duplex water pump to circulate the water in the cylinder water-jackets. They are operated by two 15-inch horizontal turbines enclosed in the same flume.

For the operation of the exciters a further pair of vertical turbine wheels has been installed, each forty-eight inches in diameter, driving the generators by a similar system to that already described for the operation of the main machines.

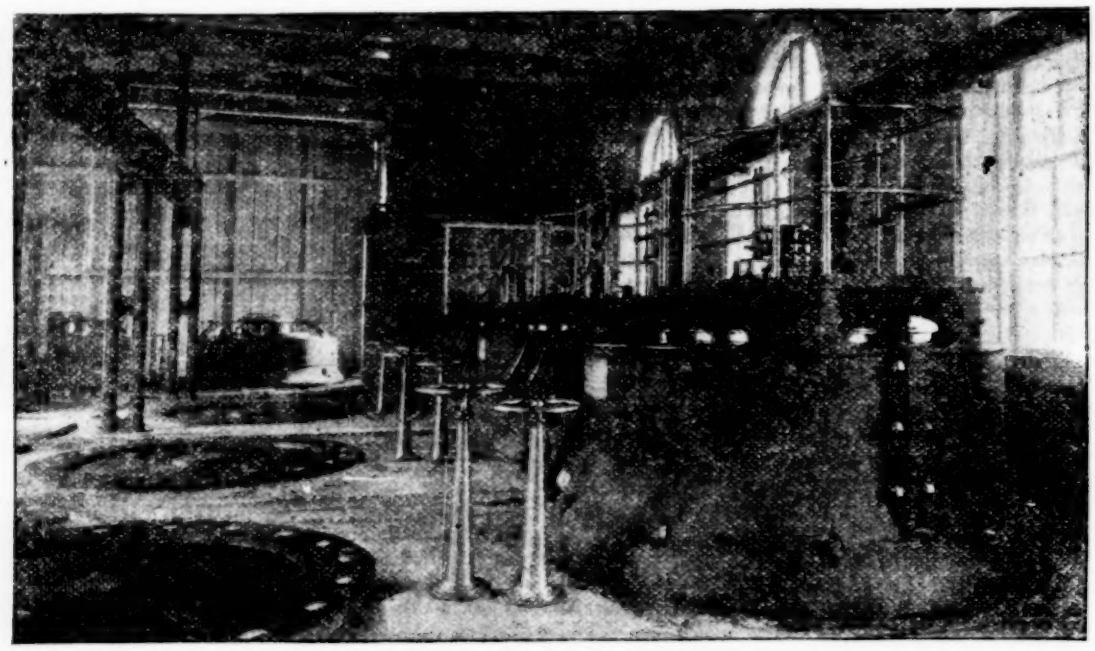

FIG. 1.—INTERIOR OF STATION, SHOWING THREE THREE-PHASE GENERATORS AND TWO D. C. EXCITERS.

The complete power plant will consist of twenty three-phase generators and two direct-current generators acting as exciters.

The total capacity of the station, therefore, will be 12,800 horse-power, divided into twenty units, each one independent of the other.

In order to obtain the best results from the power at its disposal, the Portland General Electric Co. selected the three-phase system of electrical power transmission as developed by the General Electric Co., which has proved so satisfactory in power-transmission installations of varying sizes and varying distances in this country.

One peculiar feature of the Portland installation is the employment of large blocks of power for street-railway service, involving the transformation of the poly-phase current sent over the line into direct current for railway circuits. The frequency is thirty-three cycles per second, selected on account of the large amount of power which it was necessary to convert from alternating into direct current. The current is delivered directly to the line without first passing through transformers, and when it reaches Portland is transformed down to a potential of 400 volts. For the power service the step-down transformers are connected to rotary converters, which will deliver a continuous current of 500 volts for street-railway service, as well as for the operation of stationary motors. Induction motors will also be used directly connected to the secondaries of the step-down transformers when this can be done to advantage.

The generators are of special design, and are set upon the floor of the station, the armatures revolving in a horizontal plane, with one bearing at the floor line and another on top of the armature underneath the collector rings. Each generator has twenty laminated poles. The armatures are a little over seven feet in diameter, and are about two feet high. These armatures are constructed to deliver current directly to the line at a working potential of 6000 volts effective pressure without the intermediation of step-up transformers. On account of this high voltage unusual precautions were necessary to perfect the insulation of the armature coils to avoid leakage to the ground. The armatures are wound with flat wire, and each of the coils is divided into sections, each section being separately insulated. The thoroughness with which the feat of delivering the enormous voltage direct from the machine has been accomplished can be judged by the fact that the armatures were subjected to a pressure of 15,000 volts alternating, and were both short-circuited and open-circuited under full excitation without the slightest injury.

From the generators the current passes directly to the line through the switch-board. The line is 14.3 miles long, a separate circuit being installed for each machine. It passes through an undulating country, following the course of the Willamette river as closely as possible. The poles upon which the three-phase wires are strung also carry a number of wires for the 5000-volt continuous arc current from the old transmission station, as well as the wires over which the old system of lighting with high frequency 5000-volt alternating current is effected.

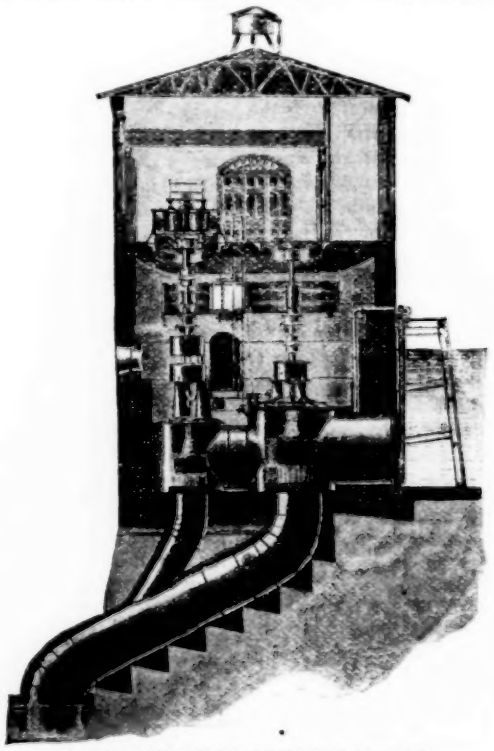

FIG. 2.—SECTION THROUGH THE STATION.

The loss in the long-distance transmission line is calculated at full load at about 11 per cent.

The direct current for the railway service is obtained by conversion from the three-phase alternating current. This is

nology, Boston, Mass.; Dr. Booker T. Washington, Tuskegee Institute, Alabama; Mrs. A. L. Wister, Philadelphia, Pa.; Gen. Henry L. Abbot, United States engineers.

Live Stock, etc.—G. Brown Goode, National Museum, Washington, D. C.

Transportation—H. G. Prout, New York; J. E. Watkins, National Museum, Washington, D C.

The jury was at work during part of last week and throughout the present one. It is hoped that the work can be completed by November 1, and the awards made shortly after that time.

While, as stated, the jury is composed of men prominent in their various professions, it would have been possible, in the minds of many, to have in some cases secured more gentlemen who had a greater familiarity with the particular subjects presented at this exposition, and also to have selected more men in active professional practice, and not so many representatives of college faculties. H. S. FLEMING, M. E.

WOODS AND MINERALS.

The Displays in the Mineral and Forestry Building.

[Special Corres. MANUFACTURERS' RECORD.]

ATLANTA, GA., October 21.

The Minerals and Forestry Building is one of the most interesting and instructive of those on the grounds, and with good reason, for here are shown two great classes of products—mineral and timber—which represent such a large part of the natural wealth of the South. The building covers 26,000 square feet, floor space, and in its centre rises an octagon tower. On the roof, reached by steps going up from the interior of the building, is the Aragon roof-garden restaurant. The construction of the building is unique, the framing all being of rough trees with the bark still on, and the outside being entirely covered by bark. Inside the same plan has been followed. The east end of the building is given to woods and woodwork of various kinds, while the west end consists in greater part of an exhibit of various Southern minerals.

This building has been under the charge of Dr. B. E. Fernow, chief of the forestry division of the Department of Agriculture, and Dr. David T. Day, chief of the division of mining statistics and technology of the United States Geolgical Survey. Both are enthusiasts in their respective branches of work, and their energy and splendid executive ability are shown by the results. The amount of money available for their work was so small as to have discouraged anyone with less courage, but what they lacked in financial assistance they more than made up in energetic work, and as a result the building and its exhibits stand conspicuous for the excellence of selection and arrangement, and, what is more, the thoroughness with which the various interests are shown. These gentlemen have been ably assisted by Mr. George B. Sudworth and Mr. Chas. Keffer, both in the forestry division, and Mr. E. W. Parker and Mr. Jefferson Middleton, of the mining statistics division. With Mr. C. D. Parker, the superintendent of the Mineral and Forestry Building, they deserve a large share of the credit, for it has been through their untiring work that the many details have been brought to perfection.

The exhibits made by various firms are of great interest, and show the increasing manufacture in the South of various classes of timber into finished products. The Nininger-Craven Co., of Gurley, Ala., has a particularly interesting display in this line. The company makes a specialty of red cedar, oak and ash manufactures, and shows here several varieties of oak and ash buckets and churns. The most interesting part of its display, however, and the one which attracts the eye of every housewife who passes, is a heavy cedar chest, moth-proof and practically air-tight. The low price at which they are sold has resulted in numerous orders being taken by the representative.

Next to it is a neat display made by the Bridgeport Woodenware Co., of Bridgeport, Ala., consisting of wooden berry or butter boxes and baskets of various kinds. The exhibit is in the form of a pyramid, the base resting on cylinders veneered with beautiful specimens of curly maple.

Opposite is the exhibit of the Atlanta Lumber Co. This company has limited itself to showing the uses to which yellow pine can be put in interior and exterior decoration. To show what can be done in interior finishing, it has prepared a pavilion with waxed and finished pine floor and polished ceiling. A handsome railing runs around the pavilion, each rail being of a different design. In the rear is a fireplace set in remarkably beautiful curly yellow pine, which is carved and finished with a soft gloss equal to anything that can be accomplished on other hardwoods. Within the pavilion are three handsome chairs, also of yellow pine, and a large library table with carved legs and fine curly pine top. Beside this pavilion the company shows some heavy yellow-pine planks, a cross-section of a pine tree and four unusually fine panels. In the rear of this there are shown samples of pine moldings, railings, cornices, rosettes and other ornamental shapes. Still beyond this are two large pine bents for trestles. One of these is of 12x12-inch timber, with three stringers on each side, 8¼x14 inches, and, above these, 6x8-inch ties, and on the side a 6x8 stringer outside the rail. This is the standard trestle used by the Pennsylvania and other railroads where the cap and sills are of red cypress. Alongside is another trestle—posts, 9x9 inches; sills, 9x10 inches; caps, 12x12 inches, and on top four stringers each 7¼x14 inches. In building this trestle the sill and cap should be white oak and the posts red cypress. These two trestles have been erected at the suggestion of Dr. Fernow as one of the practical results of his numerous tests of the strength of various timbers. These tests have shown that with the smaller-size timbers above stated the second trestle has the same strength and as great a factor of safety as the larger trestle, using less timber and performing equal service. This object-lesson has attracted considerable attention, and will bear good fruits, especially if plans now under way looking to a meeting of railroad engineers and bridge builders, at the invitation of the Atlanta Lumber Co., comes to pass. The principal feature of this meeting will be to listen to a lecture on bridge timbers by Dr. Fernow, and see his testing machine, which is now operating in the building.

Across from the Atlanta Lumber Co.'s exhibit is an interesting display of refrigerators made by the Grand Rapids Refrigerating Co. at Grand Rapids, Mich. The company shows here the Leonard cleanable refrigerators in different forms and styles, from the small one for family use through various sizes to those for grocers or butchers' uses Some of the sideboard refrigerators are exceedingly artistic, both in design and finish. One of the leading features of this form of refrigerator is that it is readily cleaned, avoiding any chance of becoming musty, and the walls are insulated with mineral wool, thus economizing in the use of ice.

The Hilton & Dodge Lumber Co., of St. Simon's Mills, Ga., has a small but very handsome exhibit of cypress lumber, showing both the rough board and the effect when finished for interior fitting. The rich, dark yellowish-brown color of the wood, with occasional dark streaks, makes a beautiful wood for interior work. Until comparatively recently cypress has been used almost entirely for heavy construction work and shingles, but now there are several factories, some in New Orleans, which make sashes, doors and blinds from it. The sample work above referred to shows how excellently it is suited for this finer work.

A very beautiful exhibit of Missouri soft short-leaf pine is made by the Missouri Lumber & Mining Co., of Grandin, Mo. It shows the wood finished both in panels and blinds, some of the former being of particularly well-marked curly pine.

At the east end of the Forestry Building, on each side of the main aisle, the State of Georgia shows two large pyramids of its many varieties of wood. Each piece has its bark on, and some of them have a longitudinal cut across the heart of the tree, showing the grain. Several of these pieces have been polished. This exhibit is made by the State Geological Survey, but for some reason it has delayed in placing the names of the varieties upon the pieces, so the real value of the exhibit is lost. This will, it is to be hoped, soon be remedied.

The Delta Moss Factory, of New Orleans, shows several bales of Spanish moss, both in the raw state and after having been treated. This has attracted considerable attention, as comparatively few people seem to be aware of the many uses to which this moss is put, nor of its appearance or texture after having been treated. Near this exhibit C. L. Goehring, of Allegheny, Pa., has a fine display of machine-cut panels, centre-pieces, frames, posts and varieties of moldings. The ornamentation is all cut from the solid piece, and shows not only the work of a remarkably ingenious machine, but a high order of artistic skill in designing.

The manufacturers of Evansville, Ind., have displayed several examples of very handsome oak furniture and one small table of particularly well-marked curly maple. Besides these, the Von Behrens Manufacturing Co., of that city, presents an exhibit of spokes and various parts of wagon fittings. If the manufacturers had paid a little more attention to the arrangement of their exhibits or sent a representative here, it could have been made very attractive.

The Mobile & Ohio Railroad has furnished in this building a display of the important woods found along its line. In addition, it shows a number of interesting maps and photographs of that region. The woods have attracted much attention. A four-foot length is shown of the following varieties: Pignut hickory, Southern red oak, water oak, Spanish oak, post oak, white oak, cow oak, cucumber tree, beech, magnolia, tulip poplar, white bay, wild cherry, sweet gum, water elm, bald cypress, white ash, spruce pine, red cedar, shell-bark hickory, Cuban pine, short-leaf pine and long-leaf pine. In front of these there are finely finished panels of each, showing their grain, color and finish.

The Fall River Bobbin Co., of Fall River, Mass., has an interesting exhibit of various forms of bobbins, shuttles, etc., manufactured by it. A display of some lumbering and log-driving tools is made by the Champion Tool and Handle Works, of Evart, Mich. Close to it, on the main aisle, is a pyramid of various kinds of hickory handles, made by H. W. Russell, of Huntsville, Ala. The North Carolina Lumber Co., of Asheville, has an interesting exhibit of tulip poplar, showing it when plain and after finishing. The panels show a rich color and fine soft polish. Beyond this is a novel display made by the Indiana Lumber Co., of Nashville, Tenn., where a booth has been constructed, framed by two pieces of a quarter-sawed oak log, with several cuts, the board on the outside being pulled down to meet that of the opposite log, while the rest are spread out, fan shape. In the back is another cut log of the same kind, the pieces being drawn down to meet those of the logs in front, giving a canopy effect. Inside are a number of finely polished panels of various woods.

Johnson & Wimsatt, of Washington, D. C., have made an interesting display of some short-leaf pine lumber from the Goldsboro Lumber Co.'s mill in North Carolina, showing both heavy timbers and finely finished panels.

Just beyond the eastern door of the building, facing the main aisle, there is a square booth veneered on the outside with Michigan cherry and on the inside with beautiful curly maple. Against the outside there are specimens of various Michigan cabinet woods, all of them very fine. The exhibit has been prepared by the Grand Rapids manufacturers, and is sufficiently novel in construction to attract attention, even if its beautiful woods did not.

Much trouble is experienced in Southern waters from the teredo worm, which attacks piles and any wood exposed in water. The Louisville & Nashville Railroad, with its many trestles built on piles, particularly between Mobile and New Orleans, has given much attention to protecting itself from the inroads of this worm, and through Mr. I. D. Fletcher, who has charge of its creosote works in New Orleans, it shows here two teredos and numerous samples of wood perforated by them with numerous holes, and also of timber which has been creosoted and exposed in the water for a long time and has not been attacked.

Against the south wall of the building, near the centre, the State of Arkansas has a large panel consisting of small panels, each finely polished, of its leading woods. The finest State exhibit of wood, however, is that presented by North Carolina in the southeast part of the Forestry Building Here have been arranged a series of stands, at the base of which are three boards four feet long cut the width of the tree and with the bark still on. Part of each board is polished, and the remainder unfinished. Above each is a large photograph taken close to the tree, showing the character of the bark and other features, and above this again another photograph showing the full height of the tree as compared with the surrounding foliage, and usually with a man standing near enough to permit an estimate of the total height. This is the same exhibit that was shown at the World's Fair, and its arrangement is so excellent that it would be hard to improve on it. Around this exhibit are hung a number of transparencies of views in North Carolina, all of them having been prepared by the photographer of the United States Geological Survey. They are all well taken and very fine, some colored in particular being most exquisite.

The John Brown Organ Co., of Wilmington, Del., has on exhibition in the building a handsome 18-foot church organ, on which a recital is held two or three times each week, attracting a large number of people. Near the organ Alfred Dolge & Son, of Dolgeville, N. Y., have a handsome piano case made from curly cherry from the Adirondacks. The open case shows the action inside.

The most interesting and valuable part of the forestry exhibit is that which Dr. Fernow presents, showing, first, a series of twenty monographs of the important timber trees of the South. Each species is fully illustrated in its salient features by a succession of panels, which are surrounded by a huge rustic frame cut from the mature trunk of the tree. The first panel displays the geographical distribution. The second shows the accepted botanical and common names, together with a list of the vernacular and botanical synonoms. The third contains full botanical display of the botanical features comprised in the germinating seedling, the mature foliage, fruit and flowering stages of growth. The fourth panel contains the commercial cuts of lumber seen in a finished state. These are the quarter-sawed, bastard and rift-sawed (tangential and radial cuts). The fifth panel contains a cross-section from the trunk of the repre-

sentative mature tree, with the bark intact, accompanied by similar sections of younger trees, together with rough-sawn lumber. The life, history and commercially important feature of each species are seen in a single picture.

On the backs of these monographs is arranged the entire forest flora of the South, comprising all species which attain the dimensions of a tree. Each species is fully illustrated by the regulation size herbarium specimen mounted in a glass case, which displays the flowering, fruiting, and mature foliage stages. Each botanical specimen is accompanied by a small but comprehensive block of wood in the natural state, with bark intact; a small map also shows at a glance the geographical distribution of the tree. Nearly 300 tree species are thus arranged, so that one may, as it were, quickly walk through the forests of the South.

The display of the products of turpentine orcharding is an exceedingly instructive and interesting one. Owing, however, to some unavoidable delays on the part of agents supplying material, this exhibit is as yet not fully arranged. The present method of "boxing" the long leaf pine is to be fully illustrated by trunks cut from a turpentine farm. Special attention will be directed to this method, both wasteful and destructive of timber, since the boxing is so severe as in most cases to soon kill the smaller trees, and by a large exposed area of resin-covered surface to insure the destruction of the larger trees when fire gets into the orchard. A newer method of boxing, less destructive to the trees by reason of a smaller cut, is illustrated by a single-tapped trunk, together with a specially devised tin cup which catches the liquid resin as it runs from the tree. The replacing of the filled cups with empty ones greatly reduces the labor of gathering the resin as is necessary under the old system of boxing. The newer method results in finer grades of manufactured rosin than can be obtained from the "scrope" and "dip" of the old boxes. This superiority is reached chiefly through the fact that the liquid resin is in the new method not so much exposed by running down over a large cut, but is at once caught in the cup.

The various grades of crude rosin for both processes of orcharding are exhibited in jars, as also are the commercial grades of rosin, together with other bi-products, such as rosin oils, turpentine, pitch, rosin, varnishes, etc. The various tools employed in turpentine orcharding are fully represented, and a series of photographs taken from pine orchards illustrate the mechanical operations of orcharding.

The long-leaf pine is the species commonly tapped for turpentine, but it has been recently ascertained that the Cuban pine, of the South Atlantic region, yields a superior rosin in larger quantities than the long-leaf pine, which produces finer secondary products. This species will doubtless soon begin to contribute its supply of rosin for the turpentine industry of the South.

An interesting exhibit is seen in the form of articles manufactured from the leaves of the long-leaf pine of the South, consisting of manufactured upholstering wool, yarn, mattings, carpet, etc. The advantages of this material is that it is unaffected by moisture and vermin, and has wearing qualities not surpassed by other materials used in carpet fabrics.

The various articles made from the saw and cabbage palmettos are displayed in the same case, consisting of brushes, brooms, etc., articles which possess great wearing qualities in service. The development of the crude "boots" of the cabbage palmetto and the stiff stalks of the saw palmetto is successively shown.

The possibility of growing commercial cork, from which bottle stoppers are made, in the South is apparently well attested by large samples of cork oak bark taken from trees raised at Sandersville, Ga. The seed from which these trees were raised was distributed some twenty-five or thirty years ago by the United States Department of Agriculture. The trees are at present forty feet high and eighteen to twenty inches in diameter. The foliage is occasionally killed by a fall of temperature to 10° F., but otherwise the trees do not suffer. This suggests the establishment as an important industry for the South the cultivation of the cork oak, which is at present derived so largely from Spain and Portugal.

The introduction of valuable exotic timber trees is one of growing interest and importance, especially in the warmer climates of the United States. Examples of how far this may be successfully done are seen in specimens of Australian eucalyptus species grown in California and Florida, together with several other deciduous-leaved kinds, such as the Wild China, Lebeh. Living specimens of the Chilian and Norfolk Island pines are displayed in this connection.

The extensive operations of the division forestry in government timber tests is fully illustrated by samples of tester beams, columns, blocks, etc., showing the various mechanical strains to which wood is subjected in construction. The aim of these operations is briefly to discover for each species of timber (under various conditions, moisture, contents,) the limits of capacity for certain strains. In the present poverty of valuable construction timbers, it becomes important not to employ any more timber than is necessary in large structures. The carefully-determined results from these timber tests enable the builder to closely calculate a sufficient factor of safety for construction timber than has been hitherto possible. The immediate advantage is seen, for example, in two railway trestles (located in the Atlanta Lumber Co.'s exhibit of long-leaf pine), the one exhibiting the present wasteful method of using nearly twice as large timber as is necessary to sustain the traffic, while another trestle shows the size of timber actually necessary to sustain the same traffic. The saving of immense quantities of timber is at once apparent for the one item of railway bridge and trestle work.

A small testing machine, with a capacity of 100,000 pounds, is placed in connection with the government timber tests, and is to be in daily operation, illustrating the method of applying tensile and columnar strains.

A very interesting series of colored maps show the location of the present available supplies of Southern timber for each of the Southern States. Other maps show the distribution of the principal tree genera, and also of the forests of the United States and government timber reservations.

The microscopic structure of about seventy-five woods may be inspected by a compound microscope so adjusted that the thin sections of wood are passed beneath the instrument in the manner of a small panorama.

The student of Southern history will find an elaborate compendium recorded during the lifetime of a large Southern pine. The principal events of history are pointed out in connection with the successive decades of growth from the time the tree was a seedling to the present, a period of over 300 years.

Three models exhibit the following interesting features of a typical Southern farm:

How the Farm is Lost—(*a*). Clearing of hilltops or excessive culling of wooded hillsides, followed by burning of litter, underbrush and young growth, and by trampling of cattle, which compacts the soil, induces rapid surface drainage, which leads to erosion, gullying and washing of the soil.

(*b*). By the unimpeded action of surface waters rushing over bare slopes and compacted soils, the fields or hillsides are gullied, meadows covered with sand and debris; the fertility, the soil itself, is washed out and carried away in brooks and rivers.

How the Farm is Recuperated—(*a*). Erosion, gullying and washing is arrested by keeping hilltops and steep hillsides under forest, by changing surface drainage into underground drainage, checking the downward rush of water by means of brush and stone dams, terracing, contour-plowing, ditching, restoring organic matter to the soil by green manuring, and mulching and cultivating thoroughly, also sodding and sowing grass on gentler slopes.

(*b*). The rush of water must be checked by dense forest growths at the tops and steepest hillsides, where it acquires its momentum. The gullies there must be barricaded with brush dams and stone works; the slopes must be changed into terraces; the draws filled up with brush, which the action of the water will cover up with soil. The soil must be treated so as to permit the water to penetrate and flow off underground.

How the Farm is Retained—(*a*). On the ideal farm, woodland, pasture and plowland in proper proportion are properly located according to the nature of the soil and lay of land. There is no waste land. Every foot of ground is used for the most fitting purpose. Roads are properly located, following the easiest grades. Cattle are fenced into the pasture, not out of the fields.

(*b*). Keep all hilltops, steep hillsides and rocky places under forest. Keep a fringe of wood along the riverside and belts of trees across the hills on long slopes. Cut your wood systematically and judiciously so that it will reproduce. Replant when natural reproduction has failed or is impossible. Let your pasture be where the slope is gentle and the soil too thin for field crops. Repair all damage by water at once. H. S. FLEMING, M. E.

VISITING THE SOUTH.

The Cotton Manufacturers' Route Through the South.

The New England Cotton Manufacturers' Association, one of the most representative business bodies of the world, its members representing an aggregate of over $300,000,000 invested in cotton mills, in deciding to make a trip through the South, naturally decided to combine business, pleasure and comfort. The result of this was the selection of a route via the Southern Railway from Washington to Atlanta, and thence to Rome, Chattanooga, and back as far as Bristol on this one road. In this trip they cross the splendid farming territory of Virginia in Loudon and adjoining counties, pass many of the most noted battlefields of the war, on through the Piedmont region of Carolina, accounted by many authorities as the most healthful country in America, being elevated just enough to get the best conditions of climate, and thence on until in Georgia a glimpse of the mountains is caught before Atlanta is reached. From Atlanta along the same line the magnificent farming region around Rome, Ga., is passed, and then to the mineral district surrounding Chattanooga. On the way home they come through East Tennessee, as noted as the Valley of Virginia for agricultural resources, as well as for mineral and timber wealth. It would have been difficult to select a trip which would give a better conception of the varied resources and advantages and progress of the South. It takes in the wheat and corn fields of Virginia and East Tennessee, the cotton-fields and the cotton mills of the Carolinas and Georgia, Atlanta with all its bustling activity, and a region in North Georgia combining great agricultural and mineral wealth. This great territory covered by the Southern Railway system is admirably illustrated at Atlanta. Here can be found a beautiful collection of the precious stones and gems of Western Carolina—a country which promises to become world-famous for its rare minerals—the coal and iron of Alabama, the timbers and clays and gold ores and granites and marbles of many States, the fruits of Georgia, and many other products of the soil, forest and mine.

In another direction, on beyond Atlanta to Birmingham, will be found the centre of coal and iron interests of the South—a region in which every coal mine and every furnace is now being taxed to its utmost capacity, and where there is the promise of activity almost unprecedented in the South in the extension of industrial interests.

Immediately along the main line in Virginia, the Carolinas and Georgia, and on branch roads extending a few miles from it, are many of the most successful cotton mills of the South. Passing through this Piedmont region at night there is seen a succession of mills lighted by electricity in full operation night and day. The general custom of the mills in that territory is to operate through the night. Everywhere along the line of this great system there is activity and progress, and the man who wants to see and study the South can cover the greater part of this immense territory by means of this one system.

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It is the policy of the A. C. L. to foster New Industries and provide every facility for manufacturers to reach the best markets in the shortest time and at lowest rates.

Southern or Northern shippers of freights will find that this road offers unequalled advantages for quick handling and safe delivery of goods. Attractive illustrated pamphlets sent free on application.

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Traffic Manager.

H. M. EMERSON,
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WILMINGTON, N. C.

effected by means of rotary transformers, a type of machine which the General Electric Co. has brought to a high state of perfection. Two of these are at present installed in the sub-station, and space has been left for an additional three. The capacity of each converter is 500 horse-power, delivered to the bus-bars of the continuous-current switchboard.

The long-distance transmission lines for this railway service, as in the case of the lighting circuits, are connected to step-down transformers, transforming the current from 6000 volts on the line to 400 volts at the secondaries. The secondaries are connected to the three collector rings on one side, and the current is thus brought into the armature of the rotary converter. The alternating current at 400 volts is then converted in this machine into direct current at 500 volts at no load and 550 volts at full load, delivered from the commutator side. The rotary converters are arranged for self regulation, the voltage on the direct-current side compounding with the same regularity as that found in the best direct-current dynamos, despite the varying losses on the long-distance line and the varying armature reaction in the rotary converter. This regulation is entirely independent of the generator, which receives constant excitation at all loads. The shaft of the rotary converter is extended twelve inches beyond the bearing of the alternating-current side to take a small pulley, from which any small machine or an arc dynamo may be driven.

The direct railway current will be carried to the East Side Railway station by means of cables under the Willamette river, and this distribution will reach as far as Milwaukee, where connection will be made in parallel with the 600-volt service from either station A or station B at Oregon City. The loop from Oregon City to Portland and back will thus be as follows: Beginning at Oregon City with thirty-three cycle three-phase current at 6000 volts, 14 3 miles will be traversed as far as Portland; the current will then be transformed to 400 volts alternating, and passing through a rotary converter, issue therefrom at 600 volts continuous, which will be transmitted eight miles to Milwaukee and connect with the continuous current from Oregon City.

This plant when finished will be one of the largest long-distance transmission plants in the world. Its satisfactory operation so far shows admirably not only the effectiveness of the three-phase transmission system for general service, but also its feasibility. This has rendered possible its adaptation to the operation of important railway systems through simple apparatus, and to the working of a distributing network composed in a large part of existing lines.

Important Application of Compressed Air.

A very interesting installation of air-compressing machinery will be a part of the contractor's equipment employed in the construction of the Jerome Park reservoir for the city of New York. Contract for this work was awarded to Mr. J. B. McDonald at $5 473,060. It involves the removal of upwards of 3,000,000 cubic yards of rock. The contractor has since the letting of the work made a thorough investigation, looking to a determination of the question whether or not machinery for excavation can best be run by steam or from a central compressed-air plant. The central-plant system has been adopted as the best and cheapest, the saving in expense being largely in labor and fuel.

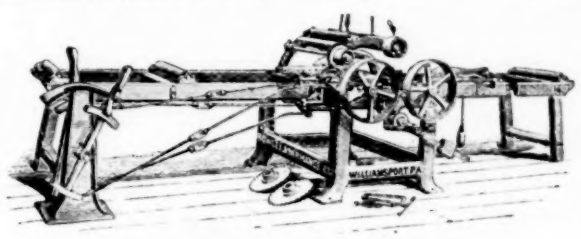
The plant made by the Ingersoll-Sergeant Drill Co. and adopted by the contractor involves the use of compound condensing Corliss air compressors run by high-class boilers, transmitting and distributing compressed air at eighty pounds pressure throughout the work.

It is contemplated to use a battery of several air compressors placed side by side, the unit adopted being a duplex compressor with steam cylinder twenty-four and forty-four inches in diameter, stroke forty-eight iuches, driving two piston inlet air cylinders, each twenty four and a-quarter inches in diameter by forty-eight inches stroke, the capacity in free air of this machine being between 3000 and 4000 cubic feet per minute. This is a duplicate of compressors at work at the Anaconda mines in Montana, where very economical results have been derived.

New Gang-Ripping Machine.

A machine possessing many characteristics that provide convenience and simplicity of operation is the new No. 1 Queen power-feed gang-ripping machine illustrated herewith. This machine has two rates of feed, and will rip stock boards at the rate of from 80,000 to 100,000 feet per day of ten hours. All rolls are driven to make a strong and positive feed. The arbor is very heavy, made of the best steel and double keyseated. It has three long bearings running in improved self-oiling boxes. It is easy to operate, quickly adjusted, and not liable to get out of order. The adjustable saw and movable gage are under perfect control of the operator. By means of a patent shifter fork (which is made in two parts), all lost motion can, it is said, be taken out of the set works, thus insuring ripping to exact widths. The rods that adjust the saw and gage have turnbuckles for taking up wear and lost motion. The new set works now being supplied by the maker (an improvement on those shown in the cut) are claimed to be superior to anything of the kind in use. They allow the gages to be set at any fractional part of an inch instead of stated fractions. With these new set works sizes can be ripped "scant" or "strong" and the gages held perfectly rigid at any desired point. The device for removing the saws is fitted accurately to the end of the frame and is as tight and as solid as the frame itself; by simply loosening one bolt, to which is attached the swivel wrench, the end is allowed to swing open, when the saws can be removed and replaced by sharp ones within two minutes. The end box is then swung into position without affecting the alignment of the arbor. A swinging weighted gage is attached to the rear of the machine for supporting the lumber at a distance from the saw to prevent the board from running away from the saw, thus insuring straight-edge lumber, and the guarantee is given that this machine will saw all lumber uniform in width from end to end. It will saw twenty-six inches wide and four inches thick.

The Rowley & Hermance Co., Williamsport, Pa., is the manufacturer of this machine.



NEW GANG-RIPPING MACHINE.

A Novel Contest.

A novel plan has been started by the Lodge & Davis Machine Tool Co , Cincinnati, Ohio, to promote public interest in technical education. On March 1, 1896, this company will present to the technical or mechanical school receiving the greatest number of votes a magnificent nickel and gold plated 16-inch swing tool-room lathe. This lathe was exhibited at the World's Fair, and pronounced by judges and visitors to be the finest piece of this class of machinery displayed. The entire lathe is nickel plated with the exception of the bolts, which are gold plated. The inside of the bed is finished in white enamel. Cabinets are provided, with shelves, which are lined with cardinal silk plush. The entire cost of the lathe was $1500. Besides being a magnificent tool, it was designed and built with reference to the highest standard of mechanical requirements, and is ready to be set up and put in operation. It is calculated to stir up interest in the contest all over the United States. By thus attracting public attention to the work of technical schools it is hoped to awaken a wholesome sentiment that will develop a more hearty and substantial interest in these institutions.

Everyone in the United States interested in the development of technical and mechanical education is entitled to a vote. Votes conforming only to the following conditions will be registered: Full name and address must be given; give name of technical school preferred; no duplicate votes will be registered; no votes will be registered that are received after 12 noon of March 1, 1896.

Good Roads Convention.

The National Road Parliament, which met in Atlanta on October 17, consisted of about 100 delegates and visitors from various States. Gen. Roy Stone, chief of the road division of the Department of Agriculture, opened the session, after which ex-Governor Levi K. Fuller, of Vermont, was chosen temporary chairman. The delegates were welcomed to the State and city by Prof. J. B. Hunnicutt, of Athens, representing Governor Atkinson. After a response had been made by Hon. S. B. Alexander, of Charlotte, N. C.; Prof. J. A. C. Wright, of Rochester, N. Y., and Hon. D. C. O'Flarity, of Virginia, a committee, consisting of Messrs. Strahan, of Georgia; O'Flarity, of Virginia; Luckerman, of New York; McDowell. of Nebraska, and Harrison, of New Jersey, was appointed on permanent organization, and Messrs. Spaulding, of New York; Hunnicutt, of Georgia; Webber, of Michigan; Tifton, of North Carolina, and Powell, of Pennsylvania, were appointed a committee on order of business. A permanent committee on resolutions was appointed, consisting of one member from each State. The following gentlemen were named:

Alabama, S. G. Pruitt; Arkansas, A. C. Miller; California, Joseph Lee Mande; Florida, Dr. S. Stringer; Georgia, Halstead Smith; Illinois, John Stewart; Indiana, J. J. More; Iowa, Eugene K. Secor; Kentucky, Dr. J. D. Claridy; Louisiana, Dr. W. L. Surence Stevenson; Maine, Prof. G. L. Hamlin; Maryland, H. S. Fleming; Massachusetts, G. A. Perkins; Michigan, W. H. Wallace; Mississippi, J. A. Redhead; Missouri, J. L. Minton; Nebraska, G. C. Bainam; New Jersey, James Owens; North Carolina, J. Van Lindley; North Dakota, H. E. Stockbridge; New York, Elisha Cook; Ohio, C. S. Ganyard; Rhode Island, G. A. Stockwell; Pennsylvania, Jason Sexton; South Carolina, S. G. Mayfield; Tennessee, F. G. Ewing; Vermont, Levi K. Fuller; Virginia, R. J. Anderson; West Virginia, J. A. Myers.

The committee on organization recommended the following permanent officers, who were unanimously elected: Gen. Roy Stone, of Washington, D. C., president; Judge W. F. Eve, of Georgia, first vice-president; Prof. J. A. C. Wright, of New York, second vice-president; W. G. Whidby, of Georgia, secretary, and Jno. S. Rogers, of New Jersey, assistant secretary. After taking the chair, General Stone delivered a brief address on the history of the movement for better roads, telling how the independent efforts of a few men had gradually attracted attention to the subject until now it had grown to be one of national moment.

In the afternoon the members met at the exposition grounds, where tests were made under the direction of General Stone of a new form of dynamometer designed to show the power required to draw a wagon with a fixed load over different kinds of roads and upon level and grades.

In the evening and on the following morning sessions were held at which delegates from the various States gave a brief review of the work which had been and was being done towards improving the roads. On Friday afternoon a meeting was held again at the exposition, and further tests made with the dynamometer. That evening a session was held at which several interesting addresses were delivered, and on Saturday morning there was a closing session at which various resolutions were reported and accepted, and the convention adjourned to meet in Nashville, Tenn., in the autumn of 1896.

This road parliament was one of the most important of the many organizations which have met in Atlanta during this exposition. The subject of good roads is upheld by every newspaper of even trifling importance in this country, and is regarded as a matter of the greatest importance to the more rapid growth and prosperity of our country by every thinking man. From our Chief Executive, through all ranks of life, from people prominent before the public, and persons in private life, there are none who have given the subject even a moment's attention but what assert that good roads are necessary to our commercial growth, and that every effort should be made to obtain them. The trouble is that only about 1 per cent. of these people are willing to take the least exertion to secure the results they say should be accomplished, and but little more than this number will even go so far as to take the trouble to aid, even indirectly, in forwarding the movement. All are willing to see it pushed to completion, but few are willing to work for it or be occasioned any expense by it.

The subject of organization for the improvement of the public road was begun to be agitated in the eighties and assumed tangible form about May, 1889, when the first road congress of Georgia was held in Atlanta. A similar movement started in the East shortly after. In 1895 the Southern Interstate Road Congress met at Memphis and at about the same time the National Road League organized at Chicago, and the two merged together into the National League for Good Roads. The year subsequent the national body convened in Washington city. The second meeting was held and called the National Road Conference at Asbury Park in July, 1894. At this meeting the body was invited by the delegates from Georgia to hold its next meeting in Atlanta.

The object of the body is to combine as far as practicable the efforts of all persons now engaged in the work of road reform and to awaken an interest in the subject among the people. The delegates are appointed by the governors of the States, by State road associations, by county officials of road work and State agricultural societies.

IF you want to sell Southern property or attract Northern and Western settlers, advertise in the *Southern States* magazine, published by the Manufacturers' Record Publishing Co.

LUMBER.

[A complete record of new mills and building operations in the South will be found in the Construction Department, on pages 200.]

Lumber Directory.

Readers of the MANUFACTURERS' RECORD who may be in the market for lumber of any description are recommended to the directory of Southern lumber manufacturers and dealers which appears among the advertising pages.

LUMBER MARKET REVIEWS.

Baltimore.

OFFICE MANUFACTURERS' RECORD, BALTIMORE, October 24.

Throughout the local lumber market the volume of business has not improved, and the same quiet tone prevails as previously reported. Receipts of yellow pine are moderate, and the supply on hand is fully ample for the limited demand. In air-dried yellow pine there has been some selling during the week, and prices are generally steady at quotations. Yardmen and boxmakers are only purchasing in small lots, and planing mills have been increasing their supplies to a limited extent. The demand for kiln-dried North Carolina yellow pine is slightly improved, and out-of-town buyers have been buying more freely. In white pine there has been some demand, and values are generally steady, with a fair supply. Cypress is quiet, with a moderate offering, and prices easy, with a fair supply. The hardwood market continues in the same quiet and uninteresting channel, and the business in progress is hardly worthy of comment. There is very little local trade reported, and the demand from out-of-town buyers has not improved. Exporters are doing very little in the way of shipping, as late advices from European markets are not encouraging. Stocks in Great Britain are fully ample for present necessities, and prices continue drooping.

The following list represents the prices current at this date:

[The quotations for yellow pine are for cargo lots, and for all hardwoods the figures indicate values for choice car lots.]

VIRGINIA AND NORTH CAROLINA PINE.	
5-4x10 No. 2, kiln dried	$16 00@18 00
5-4x12 No. 2, " "	17 50@18 50
4-4x10 No. 1, " "	16 50@17 50
4-4x12 No. 1, " "	17 00@17 50
4-4 narrow edge, No. 1, kiln dried.	13 50@14 50
4-4 wide edge, " " "	18 00@19 00
6-4x10 and 12, " " "	23 00@24 00
4-4 No. 1 edge flooring, air dried	13 00@14 00
4-4 No. 2 edge flooring, " "	10 00@11 50
4-4 No. 1 12-inch stock, " "	14 50@15 50
4-4 No. 2 " "	12 00@13 00
4-4 edge box or rough wide	7 50@8 50
4-4 " " (ordin'y widths)	7 00@7 50
4 4 " " (narrow)	6 00@7 00
4-4 12-inch "	10 00@11 00
¾ narrow edge	6 00@7 00
¾ wide	7 00@8 00
¾x10-inch	8 25@9 25
Small joists, 2½—12, 14 and 16 long	8 50@9 50
Large joists, 3—16 long and up	9 00@10 00
Scantling, 2x3—16 and up	8 50@9 00
WHITE PINE.	
1st and 2d clear, 4-4, 5-4, 6-4 and 8-4	48 50@50 50
3d clear, 4-4, 5-4, 6-4 and 8-4	43 50@44 50
Good edge culls	14 00@15 00
Good stock	16 00@17 00
CYPRESS.	
4-4x6, No. 1	20 50@21 50
4-4x6, No. 2	14 50@15 50
4-4x6, 16 feet, fencing	12 00@13 00
4-4x6, rough	9 00@9 50
4-4 rough edge	9 00@9 50
4-4 edge, No. 1	18 50@19 50
4-4 " No. 2	12 00@13 00
Gulf, 4-4, Nos. 1 and 2	28 50@30 50
Gulf, 6-4, Nos. 1 and 2	31 50@32 50
HARDWOODS.	
Walnut.	
5-8, Nos. 1 and 2	65 00@75 00
4-4, Nos. 1 and 2	80 00@90 00
5-4, 6-4 and 8-4	85 00@95 00
Newell stuff, clear of heart	85 00@100 00
Culls	20 00@30 00
Oak.	
Cabinet, white and red, Southern, plain-sawed and good, 1 and 2, 8 inches and up, 12 to 16 feet long, 4-4	29 00@33 00
Quartered white, Western, 1 and 2 quality, all figured, 6 inches and up wide, 4-4	53 00@55 50
Culls	10 00@15 00
Poplar.	
Nos. 1 and 2, 5-8	24 50@25 50
" " 4-4	28 00@30 00
Nos. 1 and 2, 6 and 8-4	32 50@33 50
Culls	13 00@16 00
SHINGLES.	
Cypress, No. 1 hearts, sawed, 6x20	7 25@7 75
No. 1 saps, sawed, 6x20	5 50@6 50
No. 1 hearts, shaved, 6x20	6 50@7 50
No. 1 saps, shaved, 6x20	5 25@5 50
LATHS.	
White pine	2 70@2 75
Spruce	2 15@2 25
Cypress	2 15@2 25

Norfolk.

[From our own Correspondent.]

NORFOLK, VA., October 21.

The volume of business during the present month has shown some expansion, and throughout the lumber industry generally the indications point to an improvement in trade during November. There is a good demand for rough lumber, and the mills at this point are generally well supplied with orders. Mills in the interior of the State and North Carolina have been kept fairly busy, but the very dry weather has caused a suspension of operations in some cases on account of the want of timber. Stocks at this point are fully ample for the demand, which is mostly for the upper grades, but prices do not improve, as expected several months ago. Air-dried lumber is in liberal supply, and prices are generally easy, with no urgent demand from any source. There is a fair inquiry for lumber for building purposes, and during the month considerable material has gone into consumption in this direction. The car shortage here has checked business for some weeks past, but is now near the end. There is considerable improvement in the demand for kiln-dried 10 and 12-inch box, and sales during the past week have been larger than usual. Stocks at all planing mills are generally heavy, and shipments have been restricted during the past week for want of cars. At all the planing mills there is considerable activity, and the fall trade is now on in earnest, and some mills have difficulty in supplying orders. Box factories and all woodworking establishments are busy, and orders are coming in as fast as they can be turned out. Charters are a little more active, with sales at $2.20 to $2 25 for New York, and $2.75 to $3 for Boston.

Charleston.

[From our own Correspondent.]

CHARLESTON, S. C., October 21.

The lumber market has ruled fairly active during the week under review, and the demand is steady, with prices firm and hardening. There is a free movement in crossties, and several large contracts are being filled for shipment to Northern ports. At all milling points in the State adjacent to this city the market for lumber continues to improve, and mills have generally well-assorted stocks, which, however, are not by any means heavy. At Georgetown the demand for cypress, long-leaf pine and North Carolina pine has been well maintained so far this fall, and prices are about 10 per cent. higher than in August last. Shipments are generally good, and during the week there has been considerable activity among shippers. The great drought in this section has kept the water in streams very low, and no timber has arrived since the spring freshet. Jacob Savage is now putting in the foundation for his saw mill, which will consist of a Stearns gang and band saw for sawing North Carolina pine. The Gardner & Lacy Lumber Co. has closed a contract for remodeling its cypress mill, which will increase its capacity 40 per cent. The company is also erecting additional dry-kilns of the same model as those now in use, and which have given such good results in drying cypress. The George Officer Lumber Co. has just closed a contract for its entire output of 20 inch cypress shingles to parties in Baltimore. The market here closes steady at the following quotations: Merchantable lumber, $14 to $16 for city-sawed, $12 to $14 for railroad; square and sound, $9 to $13 for railroad, $8 to $11 for raft; dock timber, $4.50 to $6 50; shipping, $8.50 to $10 50. Shingles are in good demand and steady at $5 to $7 per thousand. The shipments of lumber from September 1 to October 18 are as follows: New York 9,302,209 feet, Boston 1,125,000 feet, and other United States ports 430,000 feet, making a total for coastwise shipments of 11,357,209 feet, against 7,048,883 feet last year. The West India shipments for the above period were 422,000 feet, against 137,000 feet last year. Yellow-pine lumber freights are firm, with rates to New York at $4.62½ to $5. The last charter reported was a schooner, 383 tons, Charleston to New York, $4.50 from wharf.

Savannah.

[From our own Correspondent.]

SAVANNAH, GA., October 21.

The conditions surrounding the lumber market at this port are at present very favorable, and the situation is generally regarded by manufacturers and others in the trade as encouraging. A good demand prevails, and in the open market prices continue very steady, with indications of an advance during the coming month. Stocks at all milling points are not excessive, and should the demand continue they will soon be reduced, and the assortment of grades become broken. The lumber trade throughout Southern Georgia is now on a better basis, and mills are generally working on full time, while manufacturers are holding their stocks at outside figures, and in few cases are concessions made in order to effect sales. The local demand from builders and others for lumber has been fairly active, and prices steady. Prices range as follows: Ordinary sizes, $11 to $12; difficult sizes, $13 to $18; flooring boards, $15 to $22; shipstuffs, $16.50 to $20, and sawn ties, $10. Among the shipments of lumber during the past week the following vessels are reported: Schooner Wm. H. Allison for Baltimore with 373,162 feet of pitch-pine lumber; schooner Julia A. Trubee for New York with 348,320 feet of pitch-pine lumber; schooner Josephine Ellicott for Boston with 365,000 feet of pitch pine lumber; New York steamers cleared with 274,000 feet, Boston steamers 65,000 feet and Philadelphia steamers 45,000 feet. Lumber freights are quiet, with a liberal offering of handy-sized tonnage. The rates from this and nearby ports of Georgia are quoted at $4 25 to $5.50 for a range including Baltimore and Portland, Maine. Rates to the West Indies and Windward are nominal; to Rosario, $12 to $13; to Buenos Ayres or Montivideo, $10 to $11; steamer rates to New York and Philadelphia, $7; to Boston, $8, and to Baltimore, $5. Charters reported in New York for the week were a schooner, 517 tons, from Darien to Providence, R. I., $4.75; a schooner, each 560 and 430 tons, from Savannah to Wilmington, Del., or Philadelphia, at $4.25; a schooner, 450 tons, from Darien to a sound port with lumber at $4 87½, and a schooner, 612 tons, from Brunswick to Philadelphia with ties at 14 cents.

Jacksonville.

[From our own Correspondent.]

JACKSONVILLE, FLA., October 21.

There has been unusual activity among lumber shippers at this port during the past week, and the general market is now showing a more satisfactory front. The demand is very pronounced both for yellow pine and cypress lumber, and while prices are not showing a marked advance, the general list of values are well maintained. The saw mills in this section are now working up to their full capacity, and are turning out lumber rapidly. A number of vessels are now loading and a number due to arrive, so that the shipments for October will be likely the largest of the year. Stocks are becoming somewhat reduced under the brisk demand prevailing. The following vessels sailed during the week with full cargoes of lumber: Schooners John H. May, for Philadelphia, with 275,000 feet of yellow pine; City of Jacksonville, for New Bedford, with 264,000 feet of yellow pine; Collins W. Walton, for Wilmington, Del., with 330,000 feet of yellow pine, and Josephine, for New York, with 329,000 feet of cypress. The steamship Iroquois sailed for New York with 250,000 feet of lumber, 2000 crossties, and 2000 bundles of shingles among her cargo; steamship Cherokee, for New York, with 300,000 feet of lumber, 4000 crossties and 2500 bundles of shingles, with other merchandise, and the steamship Algonquin, for New York, with 300,000 feet of lumber and 2000 bundles of shingles, with other merchandise. The following charters are reported during the past week in New York: A schooner, 391 tons, from Jacksonville to Kingston, Jamaica, with lumber and box shocks at $6; a schooner, 235 tons, from Jacksonville to Demerara at $6.50, and a schooner from Jacksonville to New York with crossties at about 16½ cents.

Mobile.

[From our own Correspondent.]

MOBILE, ALA., October 21.

The outlook for trade in lumber and timber is much more satisfactory than a month ago, and the numerous inquiries for export indicate that business will show some improvement in the near future. There is a good demand from Central and South America, and prices are very steady, with stocks not heavy. It is stated that within a few days an important convention of yellow-pine exporters will be held here for the purpose of discussing the exportation of lumber and arriving at some plan by which the millmen can secure better prices for their lumber and deal more directly with the merchant and purchasers in foreign countries. Steps are also being taken to place the cypress-shingle industry on a more profitable basis, and it is likely that Mobile dealers will reorganize their shingle association and adopt a price-list which will enable them to turn out their product at a successful profit. Hewn timber, when placed upon the market, will bring 10 to 11 cents on a basis of 100 cubic feet, averaging 81 good. Twelve cents is offered for November and December deliveries and by contract. Hewn oak is quoted 18 to 20 cents per cubic foot. Sawn timber, when placed upon the market, is quoted 10 to 12½ cents per cubic foot, basis of 40 foot average. There is a fair demand for cypress at 5 to 9 cents per cubic foot, according to average. Among the shipments during the past week were the following vessels: Bark Enterprise for Havre, France, with 18,872 cubic feet of hewn timber, 36,045 cubic feet of sawn timber and 357,171 superficial feet of lumber; the steamer John Bright cleared for Trieste, Austria, with 93,863 cubic feet of sawn timber, 38,587 cubic feet of hewn timber and 125,087 feet of lumber; steamer Benedict for Delfyl, Holland, with 116,237 cubic feet of sawn timber and 38,486 feet of lumber; the bark Armonia cleared for Buenos Ayres with 663,095 feet of lumber, and steamer Columbia for Colon with 318,176 feet of lumber. At Pensacola the continued drought has lowered all the streams, so that it is impossible to float rafts, and the stocks of timber at this port are very low. Sawn timber has advanced to 11 cents per cubic foot, with a good demand. Hewn timber is in fair demand, and is quoted at 10 to 10½ cents per cubic foot, according to quality. It is stated that the fleet now bound for Pensacola is one of the largest ever known, and the outlook for the winter and spring seasons is decidedly encouraging. Among the lumber charters reported are the following vessels: A schooner, 318 tons, from Pensacola to Cienfuegos at $6.25, Spanish gold; a schooner, 387 tons, from Pascagoula to New York at $6, and a schooner, 596 tons, from Pensacola to Boston at $6 25. Mobile rates on lumber to the West Indies are $5 50 to $6 per thousand in Spanish gold; coastwise, $5 50 to $6; River Platte, $10 to $11, American gold, and Mexico, $7 to $7.50.

Beaumont.

[From our own Correspondent.]

BEAUMONT, TEXAS, October 19.

During the week under review the

lumber market has been rather quiet compared to the business activity of the past three months. The demand, however, while by no means active, is steady, and the outlook for trade is regarded as most encouraging. The Journal, in its weekly review, says: "Indeed, from all points in Texas come encouraging news as to the bright outlook, and the lull in demand is regarded as merely temporary, and is expected to give place in a short while to renewed briskness." The list of values under the present state of the market continues firm, and in no cases are concessions made in order to effect sales. While the demand from dealers continues light, and sawing orders scarce, there is a good demand for timber bills, a number of good-sized orders having been placed with the mills here during the past week. Among the timber bills booked by local mills the past week was one for something over 1,000,000 feet for the St. Louis, Arkansas & Texas road, which, although it runs through a heavily timbered section, comes to Southeast Texas for its timbers. The Reliance Lumber Co. has received an order for over 1,000,000 feet of timber, which is for export. The Consolidated Export Co. has booked several cargoes during the week, and has succeeded in chartering the Norwegian steel bark Signe for the River Platte. The demand for shingles continues fairly active, and, at the advance, orders are coming in freely. The Long Manufacturing Co. has had its new mill running irregularly during the week sawing lumber and timber for platforms and yard improvements, but next week the saw and shingle machines will be run steadily. The Frost Lumber Co., of Frost, Navarro county, was chartered last Monday with a capital stock of $5000. The incorporators are W. P. Coates, W. B. Brazelton and R. Oliver. The schooner Senator Sullivan took her full cargo at the lumber wharves, and cleared yesterday from Sabine Pass for Tampico, Mexico, drawing eighteen feet six inches of water. Government work at the Pass is progressing nicely. The last mattress for the jetties has been put down, and rock is being put in place as fast as it can be obtained.

Lumber Notes.

MR. W. C. COX has removed his saw and grist mill from Lynville, Texas, to Ethridge. He will put in a planing mill soon and otherwise enlarge his plant.

THE Frost Lumber Co., of Frost, Texas, was chartered last week with a capital of $5000. The incorporators are M. P. Coates, W. B. Brazelton and R. Oleum.

A FIRE originated in the lumber yard of the Lutcher & Moore Lumber Co., of Lutcher, La., on the 19th inst. and destroyed about 600,000 feet of lumber.

THE Johnson-Lang Hardwood Co., of St. Louis, Mo., has decreased its capital stock from $40,000 to $20,000. Its assets amount to $54,048 48 and the liabilities to $14,048 48.

THE British steamship Falkland, which sailed last week from Charleston, S. C., for Liverpool, took out 48,000 staves and thirty-eight cases of axe-handles among other cargo.

T. C. NICHOLSON and E. P. Branch, of Melbourne, Fla., have succeeded to the business of the East Coast Lumber Co. Mr. Nicholson is now in Georgia after stock for the new firm.

THE stave mill at Summerville, Ga., was burned on the 18th inst. It is a complete wreck, and the loss will amount to $2000; insurance about $1500. It is said the factory will be rebuilt.

A TRACT of 150,000 acres of fine timber land in South Alabama, near Pensacola, has been in litigation for some time past. The tract is embraced in the original grant to the Mobile & Girard Railroad, and in changing ownership passed into the hands of the Van Kirk Land & Construction Co., of Pensacola. This company mortgaged the lands to Morris Adler, of Birmingham, Ala. Upon its failure to pay, Adler instituted suit for a foreclosure of his mortgage, which he gained last week, the amount of the judgment being $134,000.

THE receipts of lumber at the port of New Orleans, as reported by the secretary of the Mechanics, Dealers and Lumbermen's Exchange, for the week ending the 18th inst. were 1,918,000 feet, and for the season 21,876,000, against 15,492,224 feet last year.

THE buildings and ovens for the wood-alcohol plant being erected at Round Mountain, near Rome, Ga., by the Garvare Chemical Co., of Cincinnati, are about completed. The purpose of the company is to manufacture alcohol from wood for chemical purposes.

THE large planing mill and woodworking establishment of J. C. Moore, at Big Stone Gap., Va., was burned on the 18th inst. Several tenement-houses, 130,000 feet of lumber and some freight cars were also burned. The loss is estimated at $10,000, on which there was no insurance.

THE Parkton Lumber Co., of Baltimore county, Md., was incorporated last week at Towson. The incorporators are Frank I. Duncan, Charles D. Harte, Samuel C. Dall and Henry J. Hick, of Baltimore county, and James W. Wolfe, of Baltimore city. The capital stock is $8000.

THE O'Neill Manufacturing Co., of Rome, Ga., manufacturer of sash, doors and blinds, reports business in that line as very satisfactory. The company, with its present contracts and increasing shipping trade, is increasing its force, and will be compelled to run day and night for several months to come.

THE Alabama Shingle Association held a meeting in Mobile on the 19th inst. and unanimously ratified the action of the joint meeting which was held in New Orleans on the 17th inst. relative to the adoption of a delivery price on shingles without regard to freight rates or distance from the consumer.

MR. EZEKIAL FLEMING, of Harrington, Del., has a large force of men at work cutting a 250-acre timber tract on Doughoregan Manor, in Howard county, Md. The timber embraces oak, poplar and chestnut. It will be shipped by way of the Catonsville Short Line Railroad, a branch of the Pennsylvania system.

THE pencil works at Chattanooga, Tenn., received last week from the Chattanooga Saw Works a machine to be used in the manufacture of pencil slats. The machine has a capacity of 60,000 to 70,000 slats a day. Preparations to commence operations at the pencil works are being rapidly completed, and in the course of several weeks pencil slats of the best quality in their grade will be turned out.

THE regular monthly meeting of the Louisiana Cypress Lumber and Shingle Association was held on the 17th inst. in New Orleans. The meeting was taken up by a discussion relative to the condition of the cypress market of the State and the reading of the report of the secretary relative to the quantity of dry stock on hand. Present prices were continued, although the advisability of an increase was discussed. A number of the Mobile and Arkansas manufacturers were in attendance at the meeting, and it was determined to effect a consolidation of these interstate interests in regard to shingles. This practically includes all the shingle manufacturers in the South, who will be governed by the decision of the association in matters of stock and price. It was decided to raise the price of shingles 10 per cent. or twenty-five cents on the 1000, and everyone present subscribed to the advance and promised to adhere to that rate.

PHOSPHATES.

Phosphate Markets.

OFFICE MANUFACTURERS' RECORD,
BALTIMORE, October 24.

The market is a shade better, with the movement somewhat improved. There is considerable rock offering, and some local sales are reported for the week. The market at points of production is quiet, especially in Florida. In South Carolina the movement is a shade better, and there is a fair demand from domestic and foreign ports. Land miners are prosecuting the work of development vigorously, and report the outlook improved. The shipments of rock from Florida ports are improving in volume, and mines that have been holding for some time past are now shipping. The arrivals recorded here during the week are as follows: Schooner Blanche Hopkins from Coosaw, S. C., with 900 tons of phosphate; schooner C. E. McGilvery from Bull river, S. C., 500 tons; schooner Douglass Gregory from Fernandina with 1000 tons; schooner Nellie W. Howlett from Ashley river with 850 tons, and schooner David Beard from the same point with 1000 tons. The following charters are reported in the local market: Schooner Anna E. Ketchum, Ashley river to Wilmington, Del.; schooner M. S. Bradshaw, same to Norfolk; schooners M. Curtis and Fannie Brown, same to Richmond, Va., and Maggie Lawrence, same to Norfolk, Va. Current rates in New York are well sustained, as the offering of tonnage is limited. The only charters reported are a schooner of 421 tons from Charleston with phosphate rock at $2, coal out from Norfolk on private terms, and a schooner, 316 tons, from Norfolk to Wilmington with guano at $1.25 and loaded.

FERTILIZER INGREDIENTS.

Great activity has prevailed throughout the general market during the past week, and there has been a steady demand from Western and Southern buyers. Sales continue to be made on the basis of $14 to $14.50 Chicago for six and twelve months' contracts of 9 and 20 tankage, and $1.60 for blood and $1.50 for concentrated for prompt shipment. Sulphate of ammonia is firm and higher. Nitrate of soda is quiet, with holders firm.

The following table represents the prices current at this date:

Sulphate of ammonia, gas	$2 75@	$—
Sulphate of ammonia, bone	2 70@	2 75
Nitrate of soda	1 85@	1 90
Hoof meal	1 80@	—
Blood	1 90@	1 95
Azotine (beef)	1 80@	—
Azotine (pork)	1 90@	—
Tankage (concentrated)	1 80@	—
Tankage (9 and 20)	1 75 and 10	
Tankage (7 and 30)	17 00@	17 50
Fish (dry)	20 50@	—
Fish (acid)	15 00@	—

Phosphate and Fertilizer Notes.

THE schooner Tofa sailed from Port Tampa, Fla., on the 19th for Cartaret, N. J., with 960 tons of phosphate rock from the Palmetto Phosphate Co.

THE British steamship Birdoswald cleared from Savannah last week for Bremen and Hamburg with 1540 tons of phosphate among her cargo for the latter city.

THE British steamship Cape Comorin from Baltimore arrived last week at Savannah. She is chartered to load phosphate rock and cotton for Hamburg and Bremen.

THE British steamship Glenloig cleared from Savannah on the 18th inst. for Bremen and Hamburg, having 1508 tons of phosphate rock among her cargo for the latter port.

IT is stated that the Central Peninsular Mining, Muck & Development Co., at Inverness, Fla., having secured a charter to develop the muck deposits of Tsala, Apopka lakes, is at work building a dredge with a capacity of 700 tons per day. This company will also operate a muck factory with a capacity of 150 tons a day, and erect a warehouse which will hold 20,000 tons of fertilizers or prepared muck. The plant will cost, when completed, $50,000. Mr. F. C. Fishback, of Charleston, S. C., is general manager, and C. C. Davis, of the same city, is superintendent.

IT is reported that the Ammonial Chemical Co., of Raleigh, N. C., has bought 10,000 acres of land in Moore county, and will erect a laboratory there, and also establish a new industry.

THE British steamship Bothal sailed from Port Tampa, Fla., on the 17th inst. for Stettin via Norfolk with a cargo of 2400 tons of phosphate from the mines of the Bone Valley Phosphate Co.

DR. J. C. BORZER, superintendent of the Standard Phosphate Co., located at Early Bird, Fla., says operations will be resumed at an early date. The company now has on hand a large quantity of rock.

THE Portland Company, which purchased the Osceola Phosphate Co.'s plant near Albion, Fla., will resume operations next week. Its fertilizer factory is also complete, having the latest improved machinery.

IT is stated that the French phosphate mines, near Luraville, Fla., which have been shut down for several months, are now running again, and the prospect is that they will run steady for some time. They will have a force of 300 laborers employed.

THE British steamship Lombard, loaded at Fernandina, Fla., with phosphate rock, while trying to swing around at the Central wharf in Savannah last week, run aground. She was drawing 20.6 feet, and was to complete her cargo with cotton. She was finally gotten off, and entered her dock to finish loading.

THE schooner Carrie L. Godfrey cleared from Charleston, S. C., on the 19th for Wilmington, Del., with 610 tons of phosphate rock, and the Adele Thackera for Cartaret, N. J., with 910 tons. The total clearances of a phosphate rock for coastwise ports from Charleston from September 1 to October 18th amount to 14 064 tons, against 7998 tons in 1894-95.

THE certificate of the organization of the Virginia & Carolina Chemical Co. was recorded last week in Richmond, Va. As previously reported in the MANUFACTURERS' RECORD, the organizers are S. W. Travers, Lewis A Carr, Frank B. Daney, James G. Tinsley, S. Dabney Crenshaw, Fortescue Whittle, Samuel T. Morgan, Edmund B. Addison and George L. Dayton. The total capital stock of the company is fixed at $6,500,000, divided into 65,000 shares of $100 each. The general stock is $4,000,000 and preferred stock $2,500,000. The place of business of the company is Jersey City, N. J., while the principal office and place of business outside of Jersey City is to be in Richmond, Va.

THE Sherman Oil & Cotton Co.'s mill at Sherman, Texas, commenced operations on the 14th inst. with a large additional force of hands.

MR J. L. CORE, of High Point, N.C., manager of the Cox Spoke and Handle Works, visited Charlotte last week in search of a place to locate. The machinery of the plant is being moved to Charlotte, and the company is now only waiting for a location in that city where the factory can be established and operations commenced.

ADVICES from Kentucky represent the timber operations in the Big Sandy valley of greater magnitude than ever known in the history of that river. The Yellow Poplar Lumber Co. will have 100,000 logs to come out. Louisville manufacturers will have a large quantity to come out, and the Little Kanawha Lumber Co. will have about 50,000. The several Catlettsburg lumber companies and all the individual producers will also make a greater showing than usual.

CONSTRUCTION DEPARTMENT.

THE MANUFACTURERS' RECORD seeks to verify every item reported in its Construction Department by a full investigation and complete correspondence with everyone interested. But it is often impossible to do this before the item must be printed, or else lose its value as news. In such cases the statements are always made as "rumored" or "reported," and not as positive items of news. If our readers will note these points they will see the necessity of the discrimination, and they will avoid accepting as a certainty matters that we explicitly state are "reports" or "rumors" only. We are always glad to have our attention called to any errors that may occur.

*Means machinery, proposals or supplies are wanted, particulars of which will be found under the head of "Machinery Wanted."

☞ In correspondence relating to matters reported in this paper, it will be of advantage to all concerned if it is stated that the information was gained from the MANUFACTURERS' RECORD.

ALABAMA.

Anniston—Cotton Mill.—The Afro-Alabama Cotton Mill proposes the erection of a cotton mill to employ colored operatives. The capital stock is $100,000. Wm J. Stevens, is president.

Bessemer—Lumber Plant.—The Krebs Manufacturing Co will add more machinery, including a large planer.

Bessemer—Iron Furnace.—The Bessemer Land & Improvement Co. will construct the two new furnaces noted last week. Captain Byrne, of Birmingham, is at work on details. All of the machinery not purchased yet.

Montgomery—Cotton Mill.—The sum of $100,000 has been subscribed to the proposed $200,000 People's Cotton Factory. The Commercial and Industrial Association can be addressed.

ARKANSAS.

Morrilton—Compress.—Serter & Co., of St. Louis, Mo , are erecting a cotton compress.

Newport—Planing Mill.—C. B. Kelley & Co. are equipping a planing mill.

Newport—Compress.—Serter & Co., of St. Louis, Mo., are building a cotton compress; machinery is now being installed.

Newport—Delinting Plant.—The Newport Ginning Co. has arranged to put in a battery of Thomas cottonseed delinters.

FLORIDA.

De Leon Springs—Saw Mill.—Allen & Rast, of Jacksonville, have erected a saw mill near De Leon Springs.

Fort Meade—Tobacco Cultivation.—A $100,000 stock company will be organized to cultivate tobacco. E. A. Cordery is interested.

Fort Pierce—Ice Plant.—Mr. Gladwin. of Titusville, contemplates erecting an ice plant in Fort Pierce.

Gainesville—Tannery.—A company has been formed to build a tannery; machinery all purchased. C. F. Smith is secretary.

Inverness—Muck Mining, etc.—The Central Peninsular Mining, Muck & Development Co. will develop muck deposits and erect a muck factory of 150 tons daily capacity to cost $50,000.

Island Grove—Turpentine Distillery.—Hayman Bros., of Gainesville, will establish a turpentine farm.

Jacksonville—Gas Works.—The Pintsch works are being enlarged and new storage capacity of 10,000 feet added.

Ocala—Manufacturing.—A Jacksonville broker has submitted a proposition to an Ocala editor for the erection of a $25,000 factory in Ocala, a subscription of $10,000 for stock being required.

Palatka—Lumber Plant.—Selden & Van Wagener, of Rome, N. Y., manufacturers of doors, sash and blinds, will remove their plant to Florida, probably to Palatka. One hundred men are employed.

GEORGIA.

Americus—Mercantile.—The Whitley Grocery Co. has been chartered with a capital stock of $30,000.

Atlanta—Water Main.—The board of water commissioners advocates the construction of another water main at a cost of about $50,000.

Augusta—Underwear Mill.—J. C. Wernig is mentioned in connection with a new underwear mill.

Cedartown—Blanket Factory.—Chas. Adamson is corresponding with Northern parties relative to the location of a blanket factory.

Cordele—Cotton Gin.—G. H. Raines will rebuild his burned cotton gin.*

Marietta—Waste Factory.—The Marietta Paper Manufacturing Co. will erect a three-story waste factory to cost $25,000.

Marietta—Water Works.—M. M. Sessions, S. A. Anderson and associates will construct water works to supply the town and paper mills.

Waycross—Tub Factory.—It is reported that the Carter Package Co., of Belmont, N. Y., will build a tub factory at Waycross.

KENTUCKY.

Danville—Flour Mill.—D. S. Hurlbut may lease or build a flour mill.

LOUISIANA.

Lafayette—Electric-light and Water Works.—A committee has been appointed by the city council to consider means for establishing a water-works system and an electric-light plant. Address John I. Bell, secretary.

New Orleans—Wine Company.—The Opera Wine Cellar Co , Limited, has been incorporated with a capital stock of $25,000; L. P. Bouby, manager.

New Orleans—Drainage System.—The proposed drainage system, under consideration for some time, is estimated to cost $9,000,000, and L. W. Brown is preparing plans and specifications. Underground canals, conduits, open-hearth canals, pumping machinery, etc , will be included.

MARYLAND.

Baltimore—Increase Capital.—The Keystone Axle Co. has been increased from $150,000 to $200,000 (office, 724 Equitable Building).

Baltimore—Engine Works.—The James D. Gray Engine & Motor Co. has been organized with William T. Malster, president; Col. George E Boynton, treasurer; William B. Price, secretary, and James D. Gray, superintendent. The purpose of the company is to manufacture a steam engine recently invented and patented by Mr. James D. Gray.

Baltimore—Engine Works.—A $100,000 company has been organized with W. F. Malster, president; G. E. Boynton, treasurer, and Jas. D. Gray, superintendent, to manufacture a new steam engine invented by James D. Gray.

Crisfield—Telephone Line.—A telephone line will be constructed from Crisfield to Ape's Hole, two and one-half miles. Address Clarence Hodson.*

MISSISSIPPI.

Meridian—Knitting Mill.—The Co-operative Cotton Mills Co. has been formally organized, and will establish a knitting mill at once; cotton mill later on. The capital is $12,500; A. H. George, president.

Meridian—Rock Quarry.—E. H. Dial and others will open a rock quarry.

Port Gibson—Telephone Plant.—The Claiborne Telephone Co. has been formed to establish a telephone system; Jacob Bernheimer, president, and W. D. Reduse, secretary.

West Point—Water Works.—The election to decide as to issuing $20,000 in bonds for water works has been affirmative. Address the mayor.

MISSOURI.

Boonesboro—Farming.—The Boonesboro Stock Farm Co , capital $25,000, has been incorporated by E. W. Stephens, B. F. Halloway and Elizabeth Stephens.

Joplin—Mining.—The Imperial Mining & Smelting Co., capital $100,000, has been incorporated by S. E. Hubbard, John E. Strong, J. H. Dangerfield and others.

St. Louis—Realty.—The Elinor Realty Co., of St. Louis, capital $7000, has been incorporated by J. H. Remmers, G. W. Baumhoff, W. M. Horton.

St. Louis—Supply.—The Meyers Supply Co., capital $50,000, has been incorporated by J. H. A. Meyers, A. A. Meyers, O. M. Polster.

St. Louis—Tobacco Factory.—The American Tobacco Co. has purchased the J. G. Butler Tobacco Co.'s plant.

St. Louis—Bulletin Company.—The National Block Bulletin Co., capital $10,000, has been incorporated by H. H. Harris, R. A. Brachvogel, C. W. Price and others.

St. Louis—Stationery.—The Miller & Spaulding Stationery Co., of St. Louis, capital $15,000, has been incorporated by E. E. Miller, G. M. Spaulding, Laura J. Miller and others.

St. Louis—Supplies.—J. H. Meyer and others have incorporated the Meyer Supply Co. with a capital stock of $50,000.

NORTH CAROLINA.

Cary—Planing Mill.—The Cary Lumber Co. will equip a planing mill.

Charlotte—Handle Mill.—J. L. Core, of High Point, will establish a handle and spoke mill in Charlotte.

Charlotte—Cotton Mill.—The Ada Manufacturing Co. will build a weaving-mill addition to cost $50,000.

Charlotte—Gold Mine.—Frank and Marshal Beaver have reopened the Beaver gold mine in Clear Creek township.

Greensboro—Cotton Mill.—The Crown Cotton Mill, idle for several years, will resume operations; has 5000 spindles.

Greensboro—Fence Company.—The North Carolina Fence Co. has been organized to introduce and construct hedge fences; Geo. Burnham, Jr., of Philadelphia, Pa., president; W. H. Pearce, manager (office, National Bank Building); capital stock $45,000.

Greensboro—Tobacco Factory.—The Pioneer Tobacco Co. has been incorporated, the capital stock to be $50,000; F. K. Borden, president, and Jos. Rosenthal, secretary and treasurer.

Greensboro—Bed-spring Works.—A company has been formed to manufacture bed springs with T. J. McAdoo, president; W. L. Scott, vice-president, and V. C. McAdoo, manager.

Morrisville—Quarries.—John Whitelaw, of Raleigh, has purchased the Morrisville brownstone quarries.

Raleigh—Cigar Factory.—A $10,000 cigar-manufacturing company is being organized. Secretary Chamber of Commerce can give information.

Tarboro—Cotton Gin.—Lucy C. Staton will rebuild burned cotton gin.*

SOUTH CAROLINA.

Charleston—Sausage Factory.—S. M. Fowler has established a steam factory for manufacturing lard and sausage.

Columbia—Cotton Mill.—The Broad River Cotton Mills Co will be organized to erect a cotton mill of 20,000 spindles; capital stock to be $150,000. T. A. McCreedy, Geo. A. Shields, J. P. Richardson and others are corporators.

Columbia—Cotton Mill.—The Broad River Cotton Mill Co. has secured a charter to build and operate a plant in Columbia. Its capital is $150,000. Electric-power will probably be used

Gaffney—Cotton Mill.—The Gaffney Manufacturing Co. will increase its capital stock to $1,000,000.

TENNESSEE.

Chattanooga—Boiler Shops.—The Casey & Hedges Manufacturing Co. has had plans prepared for its new shops; a foundry will also be added.

Ethridge—Planing Mill.—N C. Cox will put in a planing mill.

Knoxville—Flour Mill.—The Knoxville City Mills are putting in six new boilers and making repairs.

Newport—Electric-light Plant.—The Newport Mills will put in an electric-light plant.*

Waverly—Flour Mill.—H. H. Hopkins & Son will build a flour and feed mill.

TEXAS.

Austin—Paint Company.—Incorporated: The Moreland Paint & Wall Paper Co., capital stock $20,000, by Charles B. Moreland, August Exdall, Wm. H. Tobin and John W. Tobin, all of Austin.

Austin—Educational.—The Elgin Educational Co., capital stock $12,000, has been incorporated by W. H. Rivers, Morgan T. Smith and Carl F. Drake.

Austin—Sewerage.—The Austin Sewerage Co., capital stock $150,000, has been incorporated by J. J. Dodovan and G. W. Fifield, of Lowell, Mass., and D. W. Doom, Frank Hamilton and John R. Doom, of Austin.

Beaumont—Land Improvement.—The Port Arthur Land Co. has been organized with a capital stock of $60,000 to develop land and re-establish a town on Sabine lake; F. C. Henderson, agent of the company.

Dallas—Land Company.—Incorporated: The Dallas Homestead & Loan Association, capital stock $200,000, by Robert W. Sanders, H. C. Brown and others.

Fort Worth.—The Equitable Investment Co., capital stock $10,000, has been incorporated by W. T. Bashaw, A. R. Hall and J. F. Allison.

Frost—Lumber Company.—Incorporated: The Frost Lumber Co., capital stock $5000, by W. P. Coates, W. B. Brazleton and R. Oliver.

Galveston—Packery.—Plans have been prepared by P. M. Knight, of San Antonio, for an extensive dressed-beef plant, which is contemplated by English capitalists; product to be for export only.

Houston—Publishing.—Incorporated: The Houston Medical Publishing Co., capital stock $1000, by J. W. Blair, Isidor Gluck, S. C. Red, J. W. Scott and R. F. Morris.

Houston—Brewery.—O. J. Lorehn will prepare plans for a $25,000 addition to the American Brewery.

Josserand—Lumber Company.—Peter Josserand and others have incorporated the Josserand Lumber Co. with a capital stock of $100,000.

San Antonio—Improvement Company.—The Municipal Improvement Co., capital stock $50,000, has been incorporated by John J. Stevens, J. S. McNamara and James P. Earl, to do a general mining and manufacturing business and to construct and grade streets and sidewalks.

San Antonio—Street Improvements.—A proposition to issue $50,000 in bonds for street improvements will be submitted to vote. Address the mayor.

Taylor—Oil Mill.—Chartered: The Taylor Cotton Oil Co., capital stock $50,000; incorporators, J. E. Tucker, J. W. Womack, C. H. Welch, F. L. Welch and J. R. Sturgis.

Texas—Electric-light, Water and Ice Plants.—J. R. Truesdale, of St Louis, Mo., will build an electric-light, water, railway and ice plant.

Waco—Roofing.—The Waco Roofing & Cornice Co., capital stock $2500, has been incorporated by Ed Strauss, A F. Rising and E F. Millsap, all of Waco.

Waco—Machine Shops, etc.—The Texas Central Railway Co. has been granted permission to build a roundhouse, car sheds, repair shops, etc.

Waxahachee—Coal Mine.—Blas Baumgartner is reported as having discovered a coal mine.

Wharton—Water Works.—The Wharton Water Works Co. is building a standpipe.

Willis—Cigar Factory.—Owen, Smith & Co. will start a cigar factory.

VIRGINIA.

Big Island—Paper Mill.—The Big Island Paper & Pulp Mill has been sold to E. C. Westervelt, of South Bend, Ind.

Goshen—Furnace.—The Victoria Furnace Co. put its furnace in blast this week, and is putting in two new cylinder washers at its ore plant. Forty hands are employed at the washer.

Roanoke—Mining.—The Beury Mining Co. has been incorporated with a capital stock of $25,000, and Wm. Beury, president; Joseph T. Engleby, vice president, and John Engleby, secretary-treasurer.

WEST VIRGINIA.

Benwood—Bridge.—The Bellaire & Benwood Bridge Co. has been incorporated, to build a bridge across the Ohio river, by J. H. Reed, J. H. McCrady and George H. Brown, of Pittsburg, and others; capital stock $500,000.

Graysville—Flour Mill.—J. & L. Gates will erect a roller flour mill.

Huntington—Machine Shop.—Turley Bros. will build a machine shop.

Huntington—Car-fender Works.—Charter issued to the Hunter Automatic Co. for manufacturing and selling fenders to be used on street cars; capital stock $200,000. L. J. Hunter, of Covington, Ky , J. H. Hunter and others are the incorporators.

Kline—Flour Mill.—A. V. Kiser expects to put in the roller process.

Moundsville—Land Company.—W. W. Smith and others have formed the Moundsville Land Co.

Moundsville—Sand Mines.—The Moundsville Sand Co., capital stock $500,000, has been incorporated by W. W. Smith, H. W. Hunter, J. B. Hicks, C. A. Weaver, J. C. Bandall, of Moundsville; J. U. Vance, L. C. Stipel, J. M. Brown and G. H. P. Schinedt, of Wheeling.

Parkersburg—Oil Wells.—The United States Oil Co. has been chartered under the laws of Maine with a capital stock of $250,000. Ed R. Andrews is president; C. D. Greenlee, vice president and general manager, and E. A. Clark, secretary and treasurer. The main office will be in Boston, with a branch in Pittsburg. The company will drill oil wells in Marion, Doddridge and Wetzel counties, having absorbed the interests of B. Frost and others, which includes leases on 5000 acres of territory and about 250 barrels a day production.

Sistersville—Land Company.—The Sistersville Land and Loan Association has been organized with J. H. McCoy, president; A. D. Work, vice-president, and P. A. Shanor, secretary. The capital stock is $10,000.

Wheeling—Oil Wells.—The Interstate Oil Co. will drill wells in Ritchie county.

BURNED.

Alexandria, La.—Flower Bros.' sugar mill; loss $15,000.

Atlanta, Ga.—Wellhouse & Sons' paper-box factory; loss $70,000.

Big Stone Gap.—J. C. Moore's planing mill; loss $10,000.

Birmingham, Ala.—The Southern Steam Laundry; loss $2000.

Bristol, Va.-Tenn.—Crawford & Moore's planing mill; loss $10,000.

Charlotte, N. C.—The Charlotte Auditorium; loss $5000.

Clinton, La.—D. W. Pipe's gin and grist mill.

Denton, Texas.—The Denton Oil Mill damaged.

Durham, N. C.—P. E. Linnell's laundry, etc.; loss $4000.

Eatonton, Ga.—C. D. Leonard's gin and Albert Walton's gin.

Florence, Ala.—The Commercial Hotel.

Franklin, La.—The Pecot Central Sugar Refining Co.'s plant at Sorrell station, near Franklin; loss $60,000.

Goshen Church (P. O., Fredericksburg), Va.—James Haley's saw-mill boiler exploded; loss $4000.

Kirksville, Mo.—H. A. Kellogg's granary; loss $6000.

Luling, Texas.—M. L. Potts's cotton gin.

Macon, Mo.—Grain elevator owned by Eberhard & Co., of Clarence; loss $3000.

Natchez, Miss.—Mrs. Kate Minor's cotton gin.

New Orleans, La.—The National Rice Mill; loss $200,000.

Oxford, Fla.—Hillman & Co.'s turpentine still.

Richmond, Va.—Griffith, Mayo & Co.'s tobacco factory; loss $10,000.

Rockford, Ala.—Allen Robinson's cotton gin.

Ruston, La.—David Clinton's cotton gin; loss $3000.

Selma, Ala.—Mrs. M. L. Gee's cotton gin; loss $900.

St. Joseph, La.—Curry & Davidson's cotton gin.

Summerville, Ga.—The Summerville Stave Mill; loss $2000.

Weldon, N. C.—Pearson & Powell's saw mill and gin.

BUILDING NOTES.

Baltimore, Md.—School.—Contract has been let to Jno. Hughes, Jr., at $30,979 for the erection of school building.

Big Stone Gap, Va.—Hotel.—Patrick Hagan will build a 40-room hotel.

Covington, Ga.—School.—Contract for building the new city school has been let to L. L. Stevenson, of Elberton.

Clear Creek, Texas—Asylum.—Bids will be opened November 18 for erection of building for lunatic asylum to cost not more than $10,000. Address Geo. H. Law, Jr., county clerk.

Fort Worth, Texas—School.—The school board advocates the erection of a $125,000 school building.

Galveston, Texas—Association Building.—Contract let to Laureace Bros & Mason for erection of the Y. M. C. A. building.

Georgetown, Ky.—Bank Building.—Contract has been let to Jno. W. Lucas at $30,000 for the erection of the new hotel and banking building.

Houston, Texas—Hotel.—M. Jones, of Kansas City, will prepare plans for a six-story modern hotel to be built in Houston.

Kansas City, Mo.—Business Building.—Dr. W. S. Woods will erect a three-story brick building 105x115 feet.

Louisville, Ky.—Office Building.—H. Diel is preparing plans for an office building (alterations), and will use boilers, elevators, dynamos, fireproof construction, iron skylight, vaults, water-closets, etc.; wants catalogues and prices on above.

Louisville, Ky.—Station.—Contract for new station-house let to D. Lehan at $4373.

Macon, Ga.—Hotel.—Chas. B. Moling, of Columbus, Ohio, has made a proposition for the erection of a hotel to cost $200,000.

Macon, Ga.—Church.—The Vineville Methodist Church will erect a new structure to cost $12,000. Address G. D. Allen.

Mexia, Texas—City Hall.—The city council has let contract at $6600 for the erection of a city hall.

Newport News, Va.—Bank Building.—Contract for Citizens' and Marine Bank building awarded to S. B. Bartlett at $16,945.

Norfolk, Va.—Morgue.—The city will build a morgue. Address the mayor.

Petersburg, Va.—Hall Building.—The Chamber of Commerce contemplates building a hall.

Portsmouth, Va.—Hall Building.—The Y. M. C. A. proposes erecting an $18,000 hall.

Portsmouth, Va.—Warehouse.—Contract for building new warehouse for the Seaboard Air Line let to H. E. Culpepper at $22,000.

Raleigh, N. C.—Hotel.—R. H. Wright will build a three-story hotel.

St. Louis, Mo.—Dwellings.—Mrs. L. A. Croswhite has permit to build six flats 107x50 feet, two stories high and cost $15,000. Henry E. Roach has permit for an $8000 residence.

St. Louis, Mo.—Dwelling.—J. A. McFarland has permit to erect ten two-story brick flats to cost $25,000.

Washington, D. C.—Dwellings.—Mrs. D. D. Colton has permit to erect a $40,000 dwelling, and A. H. Stump a $15,000 dwelling.

Washington, D. C.—Dwelling.—J. W. Foster will erect an $8000 dwelling.

Washington, D. C.—Business Building.—Jno. R. McLean will erect a big business building. Address care of Geo. E. Easterday.

Washington, D. C.—Lighthouses.—The government is preparing plans for three lighthouses, and will soon ask bids for their construction. One will be a screw pile lighthouse. Address the board of lighthouse engineers.

RAILROAD CONSTRUCTION.

Steam Railways.

Aberdeen, N. C.—It is expected to complete the Aberdeen & West End road, of which J. R. Page is president, to Troy, N. C., forty-two miles, by December 1.

Americus, Ga.—It is reported that contracts are being made for regrading the Georgia & Alabama for a distance of 260 miles. Cecil Gabbett is general manager.

Austin, Texas.—The work of reconstructing the Austin & Northwestern has begun. It is ninety-nine miles long, extending from Austin to Llano, Texas. The vice-president is A. J. Leitnaker, at Austin.

Beaumont, Texas.—The Gulf & Interstate road has been completed to Winnie, Texas, twenty-five miles from Beaumont. E. De Normandie is president.

Calvert, Texas.—The Houston & Texas Central has begun work on its branch to the coalfields near Calvert.

Greenville, Ala.—Engineer W. B. Gilmer is surveying a route from Greenville to Florala, Ala.

Harrisonburg, Va.—Engineers of the Chesapeake & Western have nearly completed surveying a route to tidewater on Chesapeake bay. E. C. Machen is directing the enterprise.

Henrietta, N. C.—The branch of the Seaboard Air Line to the Henrietta Mills is completed and in operation.

Huntington, W. Va.—The company promoting the line from Huntington up the Guyandotte valley has been organized as the Virginias Railway Co. A contract is to be made with Gen. W. G. Dacey, of New York, to construct the road 200 miles to the Virginia line. C. W. Smith is president, and J. S. Caldwell, vice-president.

La Follette, Tenn.—It is reported that Mallory, Cushing & Co., of Chicago, contractors for the line from the La Follette Coal & Iron Co.'s property, on Coal Creek, to Middlesboro, Ky., will soon begin work. H. M. La Follette is president of the company.

Pine Springs, Ky.—E. P. Hurst, of Rochester, N. Y.; F. R. Muse and W. W. Reynolds are interested in a plan to build a railroad from Hillsboro to the Kentucky coalfields. They have been looking over a route.

Trap Hill, N. C.—The railroad proposed to the stone deposits near Trap Hill will be eleven miles long. A syndicate, including Messrs. Walter Sharp and Herbert Smith, of Norfolk, Va., are interested.

Waco, Texas.—A company of New York and Cincinnati parties, it is reported, is to be formed to construct a road from Waco to Alexandria, La. William Francis is a representative of the company.

Waycross, Ga.—It is reported that work has begun on an extension of the Waycross Air Line from Nichols to Hazlehurst, where it will connect with the Southern system. The distance is eleven miles.

Electric Railways.

Baltimore, Md.—James Young, Charles B. McLane and others, comprising the Baltimore & Gunpowder Railway Co., have projected a trolley line from the eastern suburbs to the Gunpowder river.

Fort Worth, Texas.—What is known as the Polytechnic & Glenwood Street Railway Co. is being organized to build a line in the suburbs. Atlanta parties, named Voss and Brooks, are interested.

Richmond, Va.—The Richmond Railway & Electric Co. has secured franchise to build an electric line along North avenue and other suburban streets. A. Pizzini, Jr., may be addressed.

Vicksburg, Miss.—Work has begun on the Vicksburg Light & Transit Co.'s trolley line and material is being received. It will be six miles long. C. R. McFarland may be addressed.

Machinery, Proposals and Supplies Wanted.

Manufacturers and others in need of machinery of any kind are requested to consult our advertising columns, and if they cannot find just what they wish, if they will send us particulars as to the kind of machinery needed we will make their wants known free of cost, and in this way secure the attention of machinery manufacturers throughout the country. The MANUFACTURERS' RECORD has received during the week the following particulars as to machinery that is wanted.

Boiler.—C 870, Sun Office, Baltimore, Md., wants to buy a three or five horse-power boiler with several radiators.

Boiler, etc.—Proposals will be received until October 31 for repairs to hull and joiner work and furnishing new boiler and repairs to engine of lighthouse tender Pansy. Separate bids will be received for repairs to hull and joiner work and for furnishing new boiler and repairing engine. Forms of proposals and specifications can be had by applying. Address J. B. Coghlan, commander, United States Navy, lighthouse inspector, New Orleans, La.

Bridge.—Bids will be opened November 4 for the construction of a street bridge. Address Chas. R. Kennedy.

Bridge.—Bids will be opened November 15 for the construction of a steel swing bridge, 170 foot draw span, 18 foot roadway, at Abbeville, La. Address W. W. Edwards.

Bridge.—Bids will be opened November 4 for building an iron draw bridge at Houston, Texas, as per specifications on file. Address Jno. T. Browne, mayor.

Chairs.—O. I. Halbert, Waco, Texas, wants to buy 800 chairs for a church, 300 to be folding chairs.

Cotton Gin.—Lucy C. Staton, Tarboro, N. C., wants a 60-saw cotton gin, condenser, press, etc.

Crushers, etc.—The National Mining & Development Co., Loan and Trust Building, Washington, D. C., will want rigs for shaft covers, crusher for stamp mill, etc.

Dynamos, Elevators, Roofing, etc.—See Building Note under Louisville, Ky.

Electric-light, Ice, Railway and Water Plants.—J. R. Truesdale, Room 208, Temple Building, St. Louis, Mo., will build, maintain and operate a single or combined electric-light, railway, water or ice plant.

Electric-light Plant.—The Newport Mills, Newport, Tenn., wants an electric light plant.

Engines.—The National Development & Mining Co., Loan and Trust Building, Washington, D. C., will want engines for mining.

Gas Engine.—Lucy C. Staton, Tarboro, N. C., wants a twelve horse-power gas engine.

Ice Machine.—Bids are wanted on an eight or 10-ton ice machine, new or second hand. Address J. D. Cordon & Co., Washington, N. C.

Lathe.—James F. Morgan, 208 North Holliday street, Baltimore, Md., wants a new or second-hand wood-turning or spinning lathe; head in good condition.

Lumber and Logging Plants.—L. W. Gabel, Sequatchie, Tenn., wants information regarding conveyances for hauling lumber and logs, especially steam power wagons.

Lumber Machinery.—The Cameron & Barkley Co., Charleston, S. C., is in the market for a wood-splitting machine.

Machine Tools.—L. W. Cherry & Co., Brunswick, Ga., wants prices on a small planer and 10-inch screw-cutting engine lathe.

Pipe Line, etc.—L. M. Lively, Shell Bluff, Ga., wants estimate on cost of a mile of pipe line and pumping outfit.

Powder.—Sealed proposals, in duplicate, will be received until November 18 for furnishing 580,700 pounds powder for siege and seacoast guns, delivered at the United States powder depot, Dover, N. J., and Benicia Arsenal, Cal. All information furnished upon application to Brig. Gen. D. W. Flagler, chief of ordnance, Washington, D. C.

Pumps.—See "pipe line."

Pumps.—The Land Pebble Phosphate Co., Pebble, Fla., wants estimates on a pump to furnish 2000 gallons of water per minute and 200 pounds pressure.

Rails.—L. W. Cherry & Co., Brunswick, Ga., want 25-pound relaying rails for half-mile track, with splices, spikes, etc.

Rails.—Wanted, about eight miles of relaying 40-pound street rails. Address Steel Rail, care of MANUFACTURERS' RECORD, Baltimore, Md.

Railway Lumber Equipment.—The Bridgers & McKeithan Lumber Co., Lucknow, S. C., wants to buy a logging engine and eight logging cars.

Roofing.—G. H. Raines, Cordele, Ga., wants prices on roofing.

Roofing.—Lucy C. Staton, Tarboro, N. C., wants roofing.

Roofing.—Sealed proposals will be received until November 4 for all the labor and materials required for repairs to roof, etc., of courthouse at Dallas, Texas. Address J. L. Daggett, custodian.

Saw-mill Equipment.—Lewis O. Davis & Bros., Orange Bluff, Fla., will want carriage, live rolls, etc.

Sewers.—Sealed proposals will be opened December 2 for the construction of twenty-two miles of sanitary sewers at Mobile, Ala. Address L. de V. Chaudron, city clerk.

Telephone Line.—Clarence Hodson, Crisfield, Md., wants bids on construction of two-and a half-mile telephone line complete.

Tiles.—The Southeastern Lime & Cement Co., Charleston, S. C., wants terra-cotta ridge tiles.

Water-power Plant.—G. H. Hinshaw, Winston, N. C., wants estimates on complete outfit and equipment, including turbine water-wheels, for the transmission by electricity of 125 horse-power from dam ten feet high to cotton mill one mile distant.

Well-drilling Machinery.—The Lubeck Oil & Gas Co., Hotel Schaefer, Parkersburg, W. Va., will buy machinery for drilling oil and gas wells.

TRADE NOTES.

WHEELING & LAKE ERIE mileage books are now good over Baltimore & Ohio Railroad, which is a matter of much interest to the travelling public.

FOUR sets of cards for the new Glenark Knitting Mills at Woonsocket, R. I., are being built at the works of the M. A. Furbush & Son Machine Co., Philadelphia.

AS an evidence of increasing prosperity in the South, the Carver Cotton Gin Co. is receiving good orders from throughout the Cotton States. This well-known manufacturer has been doing business with the South since 1807, and it now extends through all the Northern States and foreign countries.

AN exhibit of what American ingenuity is capable of in the production of fine tools will be displayed at the Stanley Cycle Show to be held in London, England, in November. The exhibit will include a ball-bearing grinder and other machinery for the use of bicycle manufacturers made by the Diamond Machine Co., Providence, R. I.

NINETEEN manufacturers of traction and farm engines exhibited forty engines at the Missouri State Fair recently held at St. Louis. On thirty-three of these engines the Penberthy injector was found in use. Two manufacturers out of those representing the seven other engines agreed with the Penberthy Injector Co., Detroit, Mich., to adopt this injector for their next year's engines.

A NEW rolling mill has been erected at the works of Wilmot & Hobbs, Bridgeport, Conn., to take the place of the one lately destroyed by fire. The main mill is 126 feet wide and 200 feet long, with engine and boiler room attached in a separate wing fifty-four feet wide and ninety feet long. Fire-proof construction is maintained throughout, and no wood has been used. The Berlin Iron Bridge Co., East Berlin, Conn., built the structure.

ONE of the best-equipped power stations in the South will be that of the Orleans Railroad Co. at New Orleans, La. Modern ideas are carried out in every feature of this station. Contract for the steam fitting and furnishing the entire steam equipment has been awarded to the Benjamin F. Shaw Co., Wilmington, Del. This contract includes the furnishing of all the pumps, heaters and special instruments for the station. A large number of these are of the company's own manufacture. Plans for this station were prepared by Ford & Bacon, of New York city.

T. H. RISDON & CO., Mount Holly, N. J., are building for the Pejepscot Paper Co., Brunswick, Me., one set of four 36-inch D. C. register gate wheels on one horizontal shaft in steel outer case. These wheels develop 550 horse-power under 20 feet head, and are an addition to the seven sets of the same design now in use, making a total of 4400 horse power developed by Risdon turbines in this mill. This firm also has on hand for John E. Morehouse, Paterson, N. J., a 30 inch D. C. cylinder gate wheel in iron outer case, with quarter turn, to develop, 25 horse power under 24 feet head.

A PROMINENT steamboat excursion company at Jamestown, N. Y., has closed a contract with the Marine Iron Works, Chicago, for two exceptionally fine flush-decked steam yachts for use next season on Chautauqua lake, each boat to be fifty-one feet long, 10-foot beam. The general arrangement, deck plan, engine-house, toilet-room, etc., is of a character that will render them not only attractive, but very convenient, and yet leaving a surprising amount of deck room. Each yacht will carry seventy five passengers comfortably

and safely, and in addition there is space arranged for a dozen musicians on the forward upper deck, with neat swinging awning suspended above this "band deck." The contract was given after inspection of a similar steam yacht which the same company recently completed for St. Louis parties. Delivery will be made via Chicago & Erie Railway to Jamestown, N. Y., on special cars, equivalent to six ordinary flat cars, and is the largest single shipment of the kind, height and width considered, to New York State from Chicago by rail.

MESSRS. GOEPPEN & BROWN will engage in the manufacture of plumbers' supplies and brass specialties at Louisville, Ky. The Enterprise Brass Works will be the name of the concern. Both members have enjoyed a valuable training in one of the leading establishments of the country, and their new departure should be a successful one. Buildings are now being put in shape, and contracts for complete outfit of tools have been awarded to the Lodge & Davis Machine Tool Co., of Cincinnati, Ohio. Operations at the new plant are to be started within the course of thirty days.

ANNOUNCEMENT is made that the Huyett & Smith Manufacturing Co. has transferred all of its interests to the American Blower Co., of Detroit, Mich. The personnel remains the same, with the exception of the withdrawal of Mr. W. D. Smith, vice-president. Mr. Huyett has not been connected with the company for more than ten years, and continuance of the old title of the concern is meaningless. The new company has a strong staff of experts, and the advanced position held by the hot-blast apparatus, dry-kilns, fans, blowers, engines, etc., will be fully maintained. D. M. Ferry is president of the company; A. E. F. White, vice president, and James Inglis, secretary and treasurer.

THE Cleveland Twist Drill Co., Cleveland, Ohio, in a letter to the MANUFACTURERS' RECORD, says: "We take pleasure in announcing to our customers and the trade in general that letter patent has been issued to us on our grip-socket under date of October 15, 1895. We have defended our right to this patent against the most persistant efforts of another party, who set up an interference, claiming priority of invention, and threatening our customers and ourselves with infringement suits. We have received judgments in every court of appeal in our favor, and the final issuing of the patent to us settles the question of our right to manufacture and sell these grip sockets without let or hindrance, and we stand ready, regardless of expense, to defend our rights to the fullest extent of the law."

AN enterprise of whose stability and profitableness there is no question is presenting an opportunity to a reliable business man that is an unusually attractive one. At the head of the enterprise, which is located at Atlanta, Ga., is an experienced president, who has developed a number of successful enterprises with which he is now connected. Desiring to share the business management with a capable man, an offering to that effect is now made. Such stock as would make an acceptable party equally interested in the concern will be sold. The company manufactures a staple article, owns its plant unincumbered and commands a reliable trade. To successfully meet its growing business about $20,000 of additional capital is wanted. Persons desiring to learn further of this opening should address "Manufacturer," P. O. Box 385, Atlanta, Ga.

AMONG the latest shipments of feed-water heaters made by the National Pipe Bending Co., New Haven, Conn., may be mentioned the following: 900 horse-power to Boston Electric Light Co., Boston, Mass. (ninth order); 150 horse-power to James N. Williamson & Son, Elon College, N. C.; 100 horse-power to G. W. Patterson Manufacturing Co., Harrisburg, N. C.; 150 horse-power to Tuscaloosa Cotton Mills, Tuscaloosa, Ala.; 300 horse power to Coronado Mining Co., Leadville, Conn.; 400 horse-power to Sargeant & Co., New Haven, Conn.; 250 horse-power to Douglas Furnace, Sharpsville, Pa.; 300 horse-power to Willoughbys Consolidated Co., Buluqayo, South Africa; 200 horse-power to Moundsville Electrical Co., Moundsville, W. Va.; 100 horse-power to John Davis Co., Chicago, Ill.; 100 horse-power to Fitchburg Steam Engine Co., Fitchburg, Mass.; 600 horse-power to Flagler Hotel, Palm Beach, Fla.

Iron Markets.

CINCINNATI, October 19.

The most pronounced feature of the situation is the extreme difficulty of getting forward shipments of pig iron and coke because of the alarming scarcity of cars. This is not confined to any section of the producing region, but is general. Connellsville cokemakers are in some instances thirty days behind on their orders for foundry coke, and the Pocahontas ovens are unable to get anything like an adequate supply of empties to handle their product. In the South it is stated that the production of iron has been reduced because cars cannot be secured to haul ores from mines to the furnaces. This being the case, it is unnecessary to say that the transportation facilities are insufficient to handle their finished material, and the conditions are becoming aggravated rather than relieved. It is anticipated that when the Western crops begin to move and cars are called for in that section more than at present, there will be experienced such trouble as has not been witnessed for a number of years. It is too late now for the railroads to get cars for this year's demands, even if their orders were given at once. Consumers will do well to carry as large stocks as possible, and not attempt any longer to depend on the manufacturers supplying them on a day's notice.

It would seem that purchasers of pig iron are acting in concert with buyers of all classes of iron and steel products, and have determined to purchase only for current wants. This has resulted in a return to the manner of buying current during last year. Reports from most of the rolling mills and foundries show that they are well supplied with work for the present, but few of them have orders running more than thirty or sixty days ahead. It is believed that the restricted buying now being indulged in will make it necessary for those holding off to come into the market again within thirty days, and while there may not be the excitement recently witnessed, there will be a healthy consumptive demand that will maintain prices at profitable figures. If, however, some of the prominent railroads should place their orders for cars, the situation would be changed at once. Old wheels and scrap would immediately spring into prominence again, and Southern charcoal car-wheel irons would undoubtedly advance.

There is less talk of new furnaces starting in the South, and the only one now under consideration is located at Clarksville, Tenn., which will probably be put into operation about November 1. The scarcity of ore supply has caused a notable falling off in production in the South, and it is not possible to start enough furnaces there to push the output above that of several months ago.

Prices continue firm so far as the furnaces are concerned, and the concessions being offered are on the part of speculators who wish to unload their holdings at a profit.

We quote cash f. o. b. cars Cincinnati:

Southern coke No. 1 foundry	$13 00@$—
South. coke No. 2 fdry. and No. 1 soft	12 75@ —
No. 1 soft	13 00@ —
Lake Superior coke No. 1	14 50@ 15 50
Lake Superior coke No. 2	14 00@ 15 00
Hanging Rock charcoal No. 1	16 00@ 17 00
Tennessee charcoal No. 1	14 00@ 14 50
Jackson county silvery No. 1	14 00@ 15 00
Southern coke, gray forge	12 50@ —
Southern coke, mottled	12 25@ 12 50
Standard Alabama car-wheel	15 75@ 16 25
Tennessee car-wheel	14 50@ 15 00
Lake Sup'r car-wheel and malleable	15 50@ 16 50

We quote for cash f. o. b. St. Louis:

Southern coke No. 1	$13 50@$13 75
Southern coke No. 2	13 25@ 13 50
Southern coke No. 3	13 00@ 13 25
Southern gray forge	13 00@ 13 25
Southern charcoal No. 1	14 50@ 15 00
Ohio softeners	16 00@ 17 00
Lake Superior car-wheel	17 00@ 17 50
Southern car-wheel	16 50@ 17 00
Genuine Connellsville coke	5 25
West Virginia coke	5 00

We quote for cash f. o. b. Chicago:

Lake Superior charcoal Nos. 1 to 6	$14 50@$15 50
Ohio Scotch No. 1	15 50@ 16 50
Jackson county, Ohio, silvery No. 1	15 00@ 16 00
Alabama silvery No. 1	15 00@ 15 50
Spathite	14 50@ 15 00
Southern coke No. 1	13 75@ 14 00
" " No. 2	13 50@ 13 75
" " No. 3	13 25@ 13 50

BOSTON, October 19.

The foundry business in New England appears to be in a very healthy condition, although the prices of castings are not as high as the cost of pig iron and of wages would seem to warrant. Foundrymen are afraid that their customers will go elsewhere for their castings should they put up the price, for some concerns appear to be willing to make castings based upon the cost of their iron rather than what they would have to pay for it today.

There has been quite a lull in the pig-iron business during the last two weeks, but, owing to existing circumstances, this state of affairs is not surprising. Buyers have purchased quite heavily during the last few months, and have been offered numerous lots held by speculators at a shade under the market. Consumers quite naturally feel that lower values must be looked for, whereas the true state of things shows that consumption is still in excess of production, and it would not be surprising if the prices of pig iron advanced 50 cents or $1 per ton before January 1, 1896. It is only a few days since one of the largest producers in the South sent positive instruction to accept no orders for No. 2 foundry Alabama iron for delivery this year.

There is quite a demand for carload lots of Western irons for immediate delivery, but unfortunately this class of iron is very scarce, and it is very difficult to obtain cars in which to ship them.

We quote for cash delivered Boston:

Alabama No. 1 foundry	$14 50@$14 75
Alabama No. 2 fdry. and No. 1 soft	14 25@ 14 50
Alabama No. 3 fdry. and No. 2 soft	14 00@ 14 25
Alabama No. C. C. car-wheel	18 00@ 18 50
Strong L. S. coke iron No. 1 foundry	17 00@ 17 25
Lake Superior charcoal car-wheel	17 75@ 18 00
American-Scotch (Northern) No. 1	17 00@ 17 25
Jackson county silvery No. 1	17 50@ 18 00

NEW YORK, October 19.

The attitude here is waiting for developments. This applies to speculation and to all large lines of business. The belief in better times has been and still remains general. But it has been discounted—some think over-discounted. It follows that with the least lull in trading, speculators want to take their profits on material which they have bought low. Buyers see what is up and think it a good time to wait. This applies to finished forms of iron as well as pig. The result is, rolling mills and foundries are complaining that new business does not come forward as they expected.

All this is wholesome. If prices of iron and steel can be kept low the expansion of consumption will be very great, for it will stimulate new enterprises. It would be no detriment to the trade at large if prices should recede 10 per cent. and stay there. But in iron, prices never stay long on one level. They always decline until forces intervene strong enough to turn them upward; then they advance faster than ever they declined.

Will such forces begin to be felt this fall and winter? Much will depend upon the railroads. On the eve of moving the largest crops in history there is an estimated shortage of 45,000 cars, and the roads are placing very few new contracts. Either they doubt whether the crop will be wanted anywhere to make it necessary to move it, or else the money to buy new equipment is lacking. It is certain that even now shippers in some lines are suffering from car famine.

A shrewd and experienced observer, who has just made an extended tour of the country, said here this week that any man who bets against a substantial return of prosperity in this country in the next eighteen months will regret it the rest of his life.

Meantime there is little or no check in actual business. The demand for money is strong and rates firm. Clearings are heavier; railroad earnings and tonnage increase. The dullest spot in the country is the Stock Exchange. When prices don't advance, and won't be hammered down, it is hard lines for a broker. The advent of a Kaffir boom would be welcome.

We quote for cash f. o. b. docks New York:

No. 1 X standard Southern	$14 00@$14 25
No. 1 X choice Virginia, such as Shenandoah	14 00@ 14 25
No. 2 X Alabama or Virginia	13 50@ 13 75
No. 1 soft Alabama or Virginia	13 75@ 14 00
No. 1 X lake ore coke iron	16 25@ 16 50
No. 2 X lake ore coke iron	15 75@ 16 00
Lake Superior charcoal	17 00@ 17 25

We quote for cash f. o. b. Philadelphia docks:

No. 1 X standard Alabama	$14 00@$14 25
No. 2 X standard Alabama	13 75@ 14 00
No. 1 X standard Virginia	14 00@ 14 25
No. 2 X standard Virginia	13 50@ 13 75
No. 1 X Alabama or Virginia	13 75@ 14 00
No. 1 X lake ore iron	16 25@ 16 50
No. 2 X lake ore iron	15 75@ 16 00
Lake Superior charcoal	17 00@ 17 25
Standard Georgia charcoal	17 25@ 17 50

ROGERS, BROWN & CO.

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Washington, October 26 and 27—$1 25 Round Trip via Pennsylvania Railroad.

Tickets valid for passage on all regular trains in each direction, and good for return until Monday, October 28, inclusive.

THE *Southern States* magazine is read by thousands of farmers, fruit-growers, stock-raisers and business men in all the North, West and Northwest, who are looking to the South as a future home and are trying to inform themselves as to the relative advantages of different parts of the South. If you have farm, garden or orchard property for sale the *Southern States* will put you into communication with buyers. Send for sample copy and rates. Manufacturers' Record Publishing Co., Baltimore, Md.; Wm. H. Edmonds, editor and manager.

ATLANTA EXPOSITION SUPPLEMENT.

Exposition Matters.

This has been a busy week in Atlanta. The visit of President Cleveland was made the occasion for a great outpouring of people from the neighboring States, and following this came the meeting of the New England Cotton Manufacturers' Association and gatherings of other prominent organizations. This has been the banner week of the exposition, and it is probable that from now on the attendance will be very heavy.

The MANUFACTURERS' RECORD has so completely covered in former issues the plans for the visit of the New England cotton-mill men that there is but little to add. The association is to hold its meetings on Thursday and Friday, and a number of papers covering various phases of cotton matters are to be read. The MANUFACTURERS' RECORD had expected to publish in this issue a number of them from advance copies, but most of the papers were not prepared in time, and so we are only able today to give two.

Improvement of Cotton.

At the meeting of the Cotton Manufacturers' Association, Mr. Edward Atkinson presented an elaborate and very valuable paper, from which we can only take extracts:

"The evidence of experts, so far as I have been able to secure it, is to the effect that the result of our maltreatment of cotton fibre on the way from the field to the finished cloth is to deprive the fibre of about 75 per cent. of its initial strength. I again call your attention to Dr. F. H. Bowman's work upon the cotton fibre, in which this subject is treated very fully. If that be true, then I submit that we are all a set of quacks and that we don't know the true theory of our own business. But there is another side to this, and that is, as you all know so well, the whole margin of profit in all our modern arts consists in saving the waste of the older methods, or else in saving the waste of the present time that the next man is making who has not yet mastered the theory of his own branch of industry. If that be true, then what a lucky set of men we are to have a margin of 75 per cent. of previous waste from which to work out our own profits by saving a part of it each in our own cotton factories. Yet more, if that again be true, what a more lucky set our Southern friends are, because of all the bad and wasteful practices which now prevail in our work, the very worst are to be found in the treatment of the cotton fibre from the field to the factory. I should have to search the dictionary for words of a sufficiently comprehensive kind to give a true impression of the maltreatment of the cotton fibre before we get it into our mill-yards. In fact, the biggest part of our own bad practices are made necessary in order to overcome the evil work of our Southern friends in the field, the ginhouse and the compress.

"Much of your cotton fibre is short, poor, tender and uneven because your labor is not yet under intelligent direction and your land has been scathed by bad cultivation. You possess the most wonderful abundance and variety of the leguminous plants—cow peas, peanuts, beans, clover, alfalfa, etc.—on which the bacteria live and multiply in myriads, drawing nitrogen from the air, heretofore the most expensive and the most necessary fertilizer of the cotton-field. All you have to do to renovate your exhausted lands is to find out what ash element is needed—phosphate at your doors, potash, lime or whatever each soil may need to develop the growth of your pea vines so as to secure nitrogen without cost, then feed them or turn them under and renew your cotton lands. How intelligently and how widely is this being done? You know better than I do.

"But it does not serve to nourish the soil only. Another branch of nutrition comes into the theory of the cotton plant. You must nourish the fibre of the brain.

"How fully are you sustaining your schools, black as well as white, to the development of common intelligence which must be commensurate with the common opportunity now so widely open to all? In the common school will be found the true development of the cotton fibre. In the mental fibre is the basis of all the material fibres and fabrics on which we exist. In mental capacity and force lies the secret of high and adequate wages, coupled with low cost of production.

"Compare Massachusetts and Georgia. Wherein is the difference? I am not here to sound the praises of my native State. Let her works speak for her. If she is not justified by them, no mere words may be of any avail. What has made her what she is? With more than one-fourth of her people foreign born, more than one-half either foreign born or of foreign parentage, from what source has she derived her wealth so that but one element of it, the deposits in her trust savings banks, amounts to more than $400,000,000? To whom does this belong? Nearly every other man, woman and child in the State, over 1,000,000 in number, owns a part of this deposit, exceeding $400 each on the average. Whence came it? From what resources was it derived? We possess no natural resources, no iron, no coal, no timber left, no cotton, no wheat. We have but a few strips of land in the valleys of our rivers which are fit for farming. Is it true that individual wealth and the common welfare of the people are in inverse proportion to the natural resources or products of a State? Sometimes I think that paradox contains the true principle of progress.

"When President Grant came to Massachusetts to take part in the celebration of the centennial of the Battle of Lexington on the 19th of April, 1876, it had been agreed by himself and the officials who came with him that neither should speak in public. The merchants of Boston gave him a dinner, over which the late Alexander H. Rice presided. When Governor Rice proposed the health of the President, he made the customary reference to our two principal products—granite and ice—as the only ones in which we could claim eminence. When he sat down, President Grant turned to him and said, 'That was a good speech, Governor, but you omitted the chief product of your State.' 'What is that?' asked the Governor in some surprise. 'Men,' replied the President. That was his only speech on that day. What, then, is the secret of the wealth and welfare of our State in which you may emulate us? We make our profit out of the waste of other States. When commerce was our main resource, our ships carried the flag of the Union to the remotest sea, through storm and ice, and from the tropic seas we gathered the materials of our industry; we sent our ice to Calcutta and brought back the crude products of the Indies to be converted into goods and wares for the supply of our cotton-growers. When the policy of developing yet more rapidly our textile manufactures, already well established, was forced upon us by high duties under the lead of Calhoun, Webster resisted the measure, pointing out that the single county of Essex, where old Salem is, then possessed a larger fleet of vessels than all England possessed at the time of the Spanish Armada. Whence comes our power of adapting ourselves to all the changing conditions of national policy and wresting our profit from every change? It is the common school which is the solvent of race and creed; it is the school and its social influence more than what may be taught in it which is the source of intelligent energy, by which, under the stimulus of a harsh climate, we force the apparent lack of any material resource to become the source of wealth. I have not brought this matter before you without reason. There is more profit awaiting you in saving the waste in your present mode of ginning, baling and preparing your cotton than there ever will be in its conversion into cotton fabrics, but the place to begin is in the common school. Why do the French Canadians come in crowds to our factories to do the work which our own citizens are too prosperous to care to do now? Our own people—even the children of the foreign born who have been educated in our common schools—take up the hundreds of lesser arts of the workshop rather than the monotonous work of the operative in the factory. In these workshops of small capital the men are bred who make the State, and who, with trained hand and educated brain, convert the cruder products of the forest, the field and the mine into their higher forms for the use of mankind.

"I have asked why we drain lower Canada of its French population. They came first to stay a few years and earn some money to carry back to their little farms, but their children bred in the schools of New England soon refused to return or came back from the monotonous life on the Canada farms, and now make the intregal part of our factory population.

"But don't you Southern gentlemen flatter yourselves that we shall surrender our factory work to you. We have added 500,000 cotton spindles to our number in Massachusetts this year, and when our supply of French-Canadian operatives gives out, we shall send down here and call your Georgia crackers and your mountain people from the Carolinas to come up and share our schools, our savings banks and all the other social appliances by which States are made rich and powerful. Take warning, my Southern friends, and make your schools for black and white alike equal to ours, in which we convert Jew and Gentile—Irish, Germans, Poles, Bohemians, Slavs, Arabs, negroes and natives alike—into American citizens; we have some of every type in our Boston schools.

"That is the first lesson in the improvement of your cotton and in making a profit from your wasted opportunity. I think you people of Georgia are Yankee enough to protect yourselves from our emissaries who may come down to entice your operatives away by "going us one better" in your methods of your education. If you do not, it will take a bigger fine than North Carolina puts on the emigration agents who come there to hire away her black laborers to prevent us from securing the pick of your white mill operatives.

"Whatever has been at any period in the world's history exists now in some distant place; the men of the stone age still make flint implements and dug-out canoes in Alaska and Patagonia; the Fellahs of Egypt still plow with a pointed stick; the cow is still the unit of value and money of account among the Zulu Kaffirs. Who demonetized the cow, bringing upon us all the embarrassment of the money question? The loom of the Pharaohs is still in use in your Southern mountains, and there are a greater number of people existing today who are clad in homespun than are yet supplied by our modern machinery. When their commerce is developed, and we are enabled to exchange goods for their crude products free of obstruction, the problem put before us will be how to supply 1,400,000,000 people with fifty yards each of cotton cloth so as to bring them up to our present standard of consumption. At fifteen pounds of cotton—one-sixth out for waste—that would be twelve and one-half pounds of sheeting of four yards to the pound—a fair average fabric. That supply would call for 42,000,000 bales of cotton of 500 pounds each, or only about five times our present average crop. When you really learn how to make cotton, nothing less than a bale to the acre would be thought of—640 bales to a square mile, or 65,625 square miles for the full supply. Texas can supply the whole crop of 42,000,000 bales on less than one-third of her area. One average operative can now turn out 30,000 yards a year from a modern factory. It would, therefore, take only 2,300,000 operatives to supply 1,400,000,000 people of the world with cotton fabrics as adequately as we are now supplied ourselves. If the whole world were now as well supplied with hand-spun and woven fabrics, it would take 230,000,000 operatives to do this work. Yet we take three-quarters of the life out of our cotton by our murderous method of treating it. We nearly wear it out before we begin to weave it. Can we improve this work? The old saying used to be 'Go to the ant, thou sluggard.' I say, 'Go to the fibre, thou spinner.'

"Suppose you compare the cotton fibre, with all its delicate convolutions, to a twisted wire of steel of the same form and same shape, but less liable to the effect of changes in the atmosphere. Imagine subjecting steel fibres to the tearing and rending process of the saw gin—what would occur? Wouldn't it be better to nip these fibres between two elastic rolls and to draw them away from the seed without upsetting, tangling and cutting them? Why not use the roller gin, as they are compelled to in India, because the cotton fibres are so closely attached to the seed? Why not use the roller gin, as they choose to do in Egypt, because the use of the saw gin on Egyptian cotton would impair its value one-quarter or one-third? Why do not the people of Texas raise Egyptian staple on the bottom lands of the Rio Grande and on some of their coast lands, keeping it separate from the green or woolly seed varieties, then preparing it on a roller gin? The only answer is, they do not yet comprehend the theory of the cotton fibre. Why have you failed to extend the cultivation of the Peeler and other long-stapled green-seed cotton? The answer is that you do not comprehend the theory of the cotton fibre and you mangle your long staple on a saw gin.

"The rule of progress is that by way of higher wages we compass a constantly increasing product at a lessened cost. On the other hand, since wage-earners or persons whose income is derived from small earnings constitute nine-tenths of the consumers of all the useful cotton and woolen fabrics, the more their wages rise the more they consume, and thus the harmony of interest is established between labor and

capital in the exact measure in which trained intelligence is brought to the direction of their joint force under the beneficent influence of intelligent competition.

"When our friends in the South have learned the true secret of success in the promotion of the common school and in establishing equal rights and equal opportunity without distinction of race, color or condition; when they prove that by their possession within their cotton kingdom of the imperial deposits of coal, iron and timber they can master us; when they have developed their advantages from within and through their industrial intelligences they hold out higher wages, greater abundance and better conditions of life than we can offer in far-away New England, then we may begin to fear their competition and seek some better way to share with them in their abounding welfare than we now possess.

"My Southern friends are well aware that I have always counselled them to make haste slowly in developing the spinning and weaving of cotton fabrics. I admit that there is such a thing as thinking that one knows too much, and thus losing a favorable opportunity, but there is also such a thing as getting the experience out of an undertaking while the other fellows get the money. I repeat the warning that there can be no permanent or continuous success in an art in which the margin of profit is so small as it is in this branch of industry until the great mass of the people have learned the difference between a cent and a nickel.

"I do not now take back that warning, but I may put it in the form of an interrogatory. Would it not be safer, and perhaps more profitable, to learn first the difference between a bad bale and a good bale of cotton fibre before making the effort on a very extensive scale to make a bad bale of cotton fibre into a good bale of cotton fabrics?

"You all know the many disadvantages of small isolated factories, and, if to isolation is added unfavorable atmospheric conditions, the struggle for success will be vain in competition with the great centres of the textile manufactures, where all the subsidary arts gather, where repair and supply shops abound and where there is a quick market for all the waste.

"I have lately sent a memorial to Secretary Morton, in whose department the weather bureau is, suggesting that in addition to the regular reports now made, a series of reports should be added on the relative humidity of the atmosphere, morning, noon and night, at many stations, especially in the South. In twelve months the proper sites of fine cotton spinning might be well established in every section, and the place where medium or coarse goods might pay the largest profit would also be indicated. This memorandum has been referred to the chief of the weather bureau and has been adopted. I think that our Southern friends may be saved some misdirected investments if they will sustain this memorial and await the reports.

"Let me remark again upon a point to which I long since called the attention of the association. The masses of China are clad in cotton fabrics; in a large part of North China, where the climate is cold, they are thick and wadded. If all the exports to China of cotton fabrics of Europe and America were used for clothing at five pounds per head they would not suffice for a fifth part of the population; but more than half these goods are said to be used for the boat sails and awnings of the great river population and for uniforms for soldiers. If China has been opened to trade by the Japanese, then there must soon be a much greater export demand either for the class of goods in which our Southern friends have the best chance of competing with us, or for Southern cotton to supply the Japanese and perhaps the Chinese cotton factories.

"All these matters have a very important bearing upon the improvement of cotton if my theory is well grounded that there is in fact a much greater prospective margin of profit in the manufacture of cotton from the boll up to the bale, inclusive, than there is from the bale to the yarn or woven cloth; this branch of the art also requires much less capital, and is of necessity limited to the cotton States. You may cite to me the competing cotton-growing countries of Egypt, India, China and the Argentine. The limit of land which can be spared from food crops in Egypt has been reached and cannot be extended until great works of irrigation now contemplated are completed, which will occupy many years. Long before they are established, if ever they may be, I believe the Egyptian type of black-seed cotton will be grown in abundance in lower Texas. What chance will Egypt then have, where the taxes even under English rule take half the product, against the lightly-taxed people of Texas? That State ought now to take measures for directing the industrious and intelligent, although at present ignorant inhabitants of Italy from the Argentine to their State. In Italy great numbers of the people, perhaps all who can get the means to migrate, are being driven away by the crushing weight of taxation, which is imposed mainly for the support of the passive war that is eating out the vitals of the continent of Europe in almost every country.

"With India it is unnecessary to deal. All of us who ever had any experience in spinning India cotton—my own covering over 12,000 bales consumed during the war in mills of which I was treasurer, and a greater quantity in mills of which I was assistant treasurer—will say amen to the prayer of the Lancashire operators, 'Please, O Lord, to send us more cotton, but if it graciously please Thee, O Lord, don't let it be Surats.'

"In regard to the Argentine, I learned among my earliest studies upon the cotton fibre that the only section of the earthy surface whence any future competition with the South on cotton and with the West on wheat might become serious consisted of the great prairies known as 'the pampas,' upon the Paraguay and Panama ovens. At that time, twenty or thirty years since, they were closed by the bloody despotism of Lopez and Francia. They are now open and are being brought rapidly into cultivation by the Italians and the Hebrews, who may presently overcome the misgovernment of the Spanish-American caste. When the industry of the Italian is guided and developed by the intelligence of the Hebrew, both being in possession of equal rights, a new factor will become potent in agriculture. The negro has survived slavery and the Hebrew has survived centuries of persecution. All honor to the vitality and force which has been developed under such adverse conditions. The recent great shipments of wheat from the Argentine has excited surprise. They might have been anticipated by anyone who has paid any attention to physical geography and climatology. The almost unknown continent is now South America; no longer Africa. In no other section of the earthy surface is there so vast an area of land of highest fertility and salubrity as yet but sparsely occupied as on these great pampas which extend from the outlet of the rivers, near Buenos Ayres and Montevideo, far up into the interior, including the high plains of Bolivia, east of the Andes, which, though so near the tropics, are yet so high above the sea level as to be cool and healthy, the rivers being navigable for many hundred miles by sea-going steamers. Under existing conditions, however, only cattle grazed on the plains and wheat raised by machinery will seriously compete with our product; it will be a long time before population will become dense enough to pick cotton. On the other hand, as these great resources of South America are developed, a constantly-increasing demand will arise for Southern iron and machinery, for coal and for the class of cotton fabrics which the South can make to the best advantage. We hardly yet begin to conceive the portentious influence of the passing of the dominion of iron, steel, copper and coal, the truly precious minerals, from Europe to this country, with all that it implies.

"You will have remarked that one cannot deal with the improvement of cotton without constant reference to the element of nitrogen. About five years ago I was interviewed with many others by a newspaper reporter, and was asked what would be the next great discovery of science, to which I replied, 'a full supply of nitrogen at low cost.' That discovery has been made, and the potent instrument in developing the unlimited supply of atmospheric nitrogen is the cow-pea, the soya bean, the peanut, clover and all the other leguminous plants. Your pea-vine farmer in the South is the coming man.

"When my friend, Mr. J. Stirling Morton, became Secretary of Agriculture I had a very early interview with him. I told him that the main fault in the conduct of the department had previously been that "it didn't know beans," and I then told him he must find a Southern man to become assistant secretary who did know beans, naming my long-time friends and correspondents, President McBride, of Blackburg, Va., and Dr. Dabney, of Knoxville, Tenn., as the ideal men for the position. The assistant secretary of agriculture, Dr. Dabney, is the representative of the government in the exhibition, and he can tell you for himself what he knows about beans.

"A little over a year since Principal Booker Washington, of the Tuskegee Institute, whose really great speech marked the opening of the exhibition in a singular manner, called upon me in Boston and put a case to me in this way: 'If I am to elevate my people I must enable them to live better and to eat more wholesome food. Our Southern beef and mutton are tough and stringy, and we are forced to live too much on bacon and corn.'

"I drew for him the design of an oven, to be made of pine plank plastered on the inside, fitted over a sheet of iron with holes in it, in which the heat from five lamps would, as I assured him, convert the tough beefs, muttons and fowls of his neighborhood into tender, nutritious, juicy and appetizing food, 300 to 400 pounds a day, and in which he might also bake cow-peas so that they would rival Boston baked beans, assuring him also that with such ovens he could provide all the bread, bake the sweet potatoes and cook other food for the supply of all the inmates of his school, over 600 in number, his ovens for that number to be not over 10-lamp power, burning two or three gallons of oil a day. He has justified my assurance, and the evidence can be seen, touched and tested in yonder building.

"Now, you will ask what have beans and rice to do with the improvement of cotton? A great deal; let me assure you and prove it. Cotton is a sun plant, thriving in a very warm if not tropical climate. In the course of my studies I observed that in India and China, the chief cotton-producing countries outside our own, the principal food of the working-people consisted of rice and beans or peas; in Mexico, of corn and beans, in Japan, of rice or barley and beans; in Egypt, of millet and lentils, and so on, each race having discovered by a process of natural selection that where meat is scarce, or, as in India, forbidden to many races, the source of muscular energy had been found in some variety of the leguminous plants, which supply the nitrogenous element of food, to which the physiologists impute the greatest source of muscular energy. Now it appears that in the order of nature and in the conservation of energy these legumes give homes to the bacteria, by whom the nirogen of the atmosphere is dissociated, and is thus converted to the nutrition of soil, plant and beast, and finally of mankind.

"There are in India and Japan many varieties of upland rice which require no irrigation; there are many varieties of legumes of which we know little. I imported from China for your exhibition of 1881 two or three bushels of soya beans, which were there distributed; that variety has become one of your most valuable forage plants.

"The improvement of cotton will be commensurate with the development of intelligence and energy; these factors are found in least measure in hog and hominy—least of all in the abominations of the American frying-pan. For these reasons I counselled your representative in the present cabinet to learn the science of beans and to supplement it with upland rice.

"I have also remarked that emigration pursues its way on parallels of latitude. The Italians have been diverted for a time from the north latitude to which they are accustomed to the pampas of the Argentine, in the same plane south of the equator. The emigrants which you may most surely attract to your vacant lands will come from the south of Europe, where the diet of the workman consists but little of meat, but is almost wholly of bread, cheese, beans and lentils.

"If you cannot trace the connection of these remarks to the improvement of cotton I have failed in my effort, and will now give you a rest."

Cotton-Manufacturing Interests of the South.

*By Richard H. Edmonds, Editor Manufacturers' Record, Baltimore, Md.**

As the South built its first cotton mill about the same year in which Samuel Slater laid the foundation of New England's textile industry, it may be of interest to briefly look into the reasons why the former section until recently failed to develop its cotton manufactures except to a limited extent, while the latter was making such great progress. This is essential to a right understanding of the conditions prevailing at present in the two sections, and will provide an answer to the oft-repeated question, If the South has the great advantages for cotton manufacturing claimed for it, why has it not fully developed this industry before this? The spinning and weaving of cotton for domestic use, or, as it was called in olden times, the making of "homespun" goods, was almost universal throughout the South. It is related of Jefferson that in his own household he "employed two spinning jennies, a carding machine and a loom with flying shuttle, by which he made more than 2000 yards of cloth, which his family and servants required yearly." "The four southernmost States," said Mr. Jefferson in a letter written in 1786, four years before Slater built a small mill in Pawtucket for Messrs. Almy & Brown, of Providence, "make a great deal of cotton. Their poor are almost entirely clothed in it in winter and summer. In winter they wear shirts of it, and outer clothing of cotton and wool mixed. In summer their shirts are linen, but the outer clothing cotton. The dress of the women is almost entirely of cotton, manufactured by themselves, except the richer class, and even many of these wear a great deal of homespun cotton. It is as well manufactured as the calicoes of Europe." This domestic manufacture was very general throughout the South. The cotton for the spinning process was prepared in general by the farm laborers, who picked the seed from the lint by hand. In 1790 a mill, run by water-power, was established in South Carolina, which the records say had "gin-

*Read before the Atlanta meeting of the New England Cotton Manufacturers' Association.

ning, carding and other machines, also spinning machines with eighty-four spindles each." The history of colonial times and of the first few years after the Revolution show that the natural tendency of the people of the South was far more largely than is usually supposed towards industrial pursuits. Washington's father was a miner and shipper of iron ore, and was interested in an iron-making furnace. Jefferson carried on quite a business in domestic manufacture of iron, and his slaves, so the records show, "made about a ton of nails a month at a considerable profit." In South Carolina iron-making was being carried on in 1773, and a few years before that the State offered liberal premiums to those who would establish iron works, giving to this industry the same encouragement that Massachusetts granted in 1787 to aid a cotton mill started at Beverly, to the promotion of which the legislature voted £500. All history shows that in those early days the South was as much interested in the extension of its industrial interests as was New England. But when Whitney invented the gin, making possible the extension of cotton cultivation to meet the consumptive demands which had been created by the inventions of Arkwright, Hargreaves and others, he opened a field for the employment of capital and labor more profitable than manufacturing. As capital, brains and muscle always turn to the employment yielding the largest financial results, the whole trend of Southern thought was drawn to cotton production, with rice, sugar and tobacco coming in only a little behind. In 1801 the average New York price for cotton for the year was forty-four cents, and for forty years, from 1800 to 1839, the New York prices ranged from that figure to thirteen cents, and for the whole period averaged over seventeen cents a pound. With such profits as these prices yielded, it would have been contrary to all economic history if the South had failed to concentrate all its energy upon the extension of cotton production. It could not be expected that men should fail to grasp such money-making opportunities as cotton-growing presented for at least two generations, or from 1800 to 1860, with the single exception of the decade from 1840 to 1850, during which period overproduction and other causes forced prices to the lowest 10-year average on record. It is interesting to follow the marked turn which this decline in profits on cotton gave to industrial pursuits, awakening into new life the long dormant industrial capabilities of the people of the South. This is illustrated by a few facts from census reports. In 1850 the South had 2335 miles of railroad, and the New England and Middle States 4798 miles. By 1860 the South had increased its mileage to 9897, quadrupling that of 1850, while the New England and Middle States had increased to 9510, or a gain of only about 100 per cent. In 1850 the mileage of the two Northern sections exceeded that of the South by 2463 miles. By 1860 the conditions were reversed, and the South led by 387 miles. In that decade the South spent $220,000,000 upon the extension of its railroad system, nearly all of it having been local capital. During this period the South doubled its capital and output of flour, sawed and planed lumber, iron founding, steam engine building, etc., and in 1860 had $12,000,000 invested in cotton mills. Nearly all of its factories of all kinds were moderate in size, but in number they aggregated 24,590, and their capital was $175,100,000. But this is a digression.

The wonderful prosperity which cotton production brought about finds an apt illustration in the simple statement that though the South had only one-third of the country's population, and only one-fourth of its white population, the assessed value of its property, according to the census of 1860, was $5,200,000,000 out of a total of $12,000,000,000 for the entire country, or 44 per cent. But when the war ended the two sections had been widely separated. Relatively, one, swept by destruction, had been thrown back in its career half a century, while the other had been marvelously stimulated and pushed forward half a century as compared with the positions of the two sections in 1860, thus creating a great gulf of a hundred years between them. The New England man who seeks to understand the South must look at it in this light. He must see that it is not simply a case where one section stood still for a quarter of a century as a result of the most disastrous war in the world's history, judged financially and by its immediate effect, and the other section advanced by leaps and bounds. The property, the ambitions, the hopes, the labor system of a whole section were swept away, and in the destruction went hundreds of thousands of its ablest and most energetic men. It is only that this section may be studied in the light of these facts that they are mentioned. What this section has accomplished has been worked out under these disadvantages, and understanding this, it is possible to better understand and appreciate the future of the cotton-manufacturing interests of a region whose mills are already consuming 1,000,000 bales a year, against 2,000,000 bales for the remainder of the country. Our New England friends can, in this light, more clearly study the forces now at work for Southern upbuilding, and decide whether to join their Southern competitors on their own ground and secure the same advantages which they enjoy, or disregard their competition. Personally, I am firmly persuaded that New England will find it profitable to take an active part in the development of the South's cotton-mill interests, and thus reap some of the profits. This section offers to New England the same opportunity which the world has afforded to Great Britain—a field for the employment of its surplus capital and energy to the profit of all parties interested. I have been informed by one of the leading cotton manufacturers of New England that at least 300,000 new spindles must annually be added to the mills of that section to offset the depreciation from wear and tear. This has not been done, I believe, in recent years.

At the present time the South is building about 100 new mills, which, with enlargements now being made to existing plants, will need for equipment over 800,000 spindles. At the risk of wearying you with statistics, it becomes necessary to present some figures to show the actual progress which the South has made in this industry. The census of 1880 reported that there were in the South 180 cotton mills, with an aggregate capital amounting to $21,976,000, and having 667,000 spindles. By 1890 this had nearly trebled, and we had 254 mills, $61,124,000 of capital and 1,712,000 spindles. No one would have dared in 1890, though, to predict that the figures of that year would treble in another decade, but this we can now see will be done. Five years have passed, and the South has in mills now in operation and those which will be at work within sixty days 3,000,000 spindles. Add to this number 800,000 for mills under construction, and by the end of the current crop year this section would have 3,800,000 spindles in operation. It will then only require an average increase of 300,000 spindles a year to give the South a total of 5,000,000 spindles by 1900. It is now safe to predict a considerably larger number than that.

The relative growth of the consumption of cotton in Northern and Southern mills of late years, as reported by the New Orleans Cotton Exchange, has been as follows:

Crop years.	Northern mills. Bales.	Southern mills. Bales.
1894 95	2,083,839	862,838
1893 94	1,601,173	718,515
1892 93	1,687,286	743,348
1891 92	2,190,766	686 080
1890-91	2,027,362	604,661
1889 90	1 799,358	546,894
1888 89	1,785,979	479,781
1887 88	1,804,993	456,090
1886 87	1,710,680	401,452

Under the activity prevailing last year in cotton-manufacturing interests Northern mills regained most of the loss of the two preceding years, but their purchases were still 107,000 bales less than 1891 92, while during the same period Southern mills increased their consumption on 176,800 bales compared with 1891-92. The Commercial and Financial Chronicle distinguishes between the "takings" or purchases and the actual consumption, and makes the figures as follows:

ACTUAL CONSUMPTION.

Crop years.	Northern mills.	Southern mills.
1889-90	1,800 000	549 478
1892-91	1 925,000	805 916
1891 92	2,025 000	681,471
1892-93	1,950,000	733,701
1893 94	1 675,000	723,329
1894-95	1,640 769	853,352

According to these figures the actual consumption in Northern mills, while larger, of course, than during the panic year 1893-94, was less than for any year since 1890-91, having been 85,000 bales smaller than in the latter year, and 185,000 bales smaller than in 1891-92. Southern mills, on the contrary, gained nearly 250,000 bales compared with 1890-91, and 172,000 bales compared with 1891-92. In 1890-91 the South consumed less than one-third as much cotton as Northern mills; last year Southern consumption was nearly one-half as much as Northern, and is steadily gaining. For the present year it will be at least 1,000,000 bales, which is more than half as much as Northern mills will consume.

Of the advantages of the South for this industry it is almost needless to speak. Probably the most important consideration in the estimation of millmen is the labor. The South has an abundant supply of the very best help from which to secure mill operatives. An investigation on this point will convince the most skeptical. A New England mill-owner lately stated that to say that New England mill help was in any way superior to Southern was simply to say that the lower classes of foreigners are superior to the native Anglo-Saxon Americans. Half a century ago New England mills were operated by native Americans—daughters of the small farmers in the neighborhood of the mills—but the incoming of French Canadians and others drove the American girls out of the mills. There is no danger of this in the South, at least for many years to come. The supply of possible operatives, eager for the opportunity to earn a living by working in cotton mills, is today sufficient to equip three or four times as many mills as we have, provided these mills are not clustered too closely in any one locality. The increase in the help supply will be almost as great as the increase in mills for many years. These people are capable of acquiring the highest skill required in cotton manufacturing; they are docile, not given to strikes, and as a class are anxious to find work and willing to accept much lower wages than Northern operatives are compelled to have in order to live. On this point it must be remembered that nature has made it possible to live in the South at a very much lower cost than in the North, because of the lower cost of fuel and clothes, the cheapness with which food can be produced and the abundance and cheapness of building materials. These are permanent advantages; no possible change of conditions can alter them. They forever guarantee a lower labor cost in the South than elsewhere. What it means to have the cotton mills in the cotton-fields, with cheap and abundant fuel and water-power, the ability to secure as sites for mills at a nominal cost a large tract of land on which to establish a mill community entirely under the control of the mill management, you can appreciate.

In order, however, to fully understand the South's strong position as a cotton-manufacturing area, it is necessary to take a comprehensive view of the general trend of the world's business. Everywhere manufacturing is tending to the source of raw material, provided the facilities for production can be secured. In former years the profits in manufacturing were sufficiently large to justify the transportation of raw material. New England could haul its cotton 1000 miles, and its coal almost an equal distance, and find a profitable market for the production of its goods. Great Britain could import its cotton from America, operate its 40,000,000 spindles and market the product of its mills throughout the world. But with the decreasing margin of profit in manufacturing, it is in cotton, as in iron, timber and other lines of industry, necessary for the mill to seek the source of supply. In the fullness of time the South's opportunity has come. Its own people have demonstrated their unusual ability in cotton manufacturing. The profits in this industry throughout the South have been sufficiently large to turn the attention of this entire section very largely to this industry. The ablest financiers in the South, the most conservative bankers, the general merchants and the farmers are all now investing freely in cotton mills. The 3,000,000 spindles which the South now has in operation is scarcely 4 per cent. of the number of spindles in the world, latest reports giving the total as 85,000,000, although the South produces over 60 per cent. of the world's cotton crop. There are abundant reasons, easily understood by any man who will take the time to investigate, why the South was unable after the disastrous losses of the war to take up industrial pursuits until about 1880. It is mainly during the last five or six years that the greatest progress has been made, and every year is adding increased momentum to this movement. Looking to Central and South America and to Asia and Japan, by the cutting of Nicaragua Canal, for a market for American cotton goods, the South's position is impregnable. It has every possible advantage that can be asked for the production of cotton goods at the lowest possible cost. Its advantages for distribution are but little inferior to those of the North, and whatever disadvantages it has in this way will be eliminated under the general progress which is being made. No one can possibly any longer question the South's future position in the cotton-manufacturing world. The rapid development of the textile industry in the South does not necessarily involve its decrease in New England or Great Britain. Even should these hold their present business and continue to operate as many spindles as they do today, the natural increase which the ever-growing demands of the world require must be met by the South. It is possible that China and Japan may become factors in this industry, but if they do the reduced cost at which they will produce goods will simply be an additional force to drive the capital in New England and British mills to the South as the only place which can hope to meet competition from mills in Japan and China, provided this industry should develop largely in those countries.

The South's position is safe. It is only a question as to whether the mill-owners of other sections shall leave the South to develop this industry with its own capital and by its own labor, or join in the work, and thus secure a part of the profits, and all sections be mutually benefited by an interchange of investments.

MANAGERS of mills, factories, furnaces, mines, etc., and parties starting manufacturing enterprises and needing machinery or supplies of any kind will find it profitable to consult the advertising columns of the MANUFACTURERS' RECORD. Its pages contain names of the best houses in the country among manufacturers of and dealers in machinery and mill supplies.

EXPOSITION JUDGES.

Good Selections Made for Important Work.

[Special Cor. MANUFACTURERS' RECORD.]
ATLANTA, GA., October 21.

The directors of the exposition have made most fortunate selections of judges. The gentlemen named below are well known, and stand high in their various professions. Dr. D. C. Gilman, president of Johns Hopkins University, who is commissioner of awards for the exposition, and is, therefore, president of the jury of awards, has arranged an excellent system for judging. This is as follows:

1. After careful consideration of the merits of various systems of awards, it is decided to recognize four degrees of merit:

(*a*). Honorable mention will be made of a large number of exhibits, good in their various departments and worthy of official recognition, either because of the processes involved in their production or because of the results attained.

(*b*). Medals in bronze or in silver will be awarded for higher degrees of merit. It is impossible in brief general phrases to indicate the qualities which constitute "merit" in exhibits so diverse as those that will here be brought together, but in each department the jury will decide what is entitled to the bronze medal and what to the silver medal.

(*c*). In addition to the three classes of distinction already named, which are open to all exhibits, there will be a limited number of exceptional awards. The diplomas in this group will declare that the recipient is entitled to a gold medal. These will be bestowed upon exhibits of pre-eminent worth and widespread importance, and they will be bestowed in order to call the attention of the country to noteworthy indications of mechanical, industrial, intellectual and artistic progress. For example, inventions of far-reaching significance, public works of widespread influence, new and noteworthy educational establishments, improvements in the production of staple articles, advances in the arts of transportation, contributions to the enjoyment of life (parks, museums, etc.), will be considered.

For the judgment of these exhibits a board of highest award will be constituted, which will include the chairmen of the various department juries, and, in addition, a certain number of men who are qualified to pronounce upon the industrial and intellectual progress of the country. To the highest board questions of difficulty and importance respecting awards in other grades may be submitted from time to time if occasions arise when their counsel is desired.

2. The awards in all grades will not be made because of the general reputation of the exhibitors, or because of what they have shown elsewhere, but because of the excellence of what is set before the juries in the exhibition at Atlanta. Any exhibitor may, if he chooses, for any reason whatsoever, withdraw his exhibit from competition. Exhibits not thus withdrawn will receive the attention of the juries.

3. The awards in every grade will be publicly announced and will be certified by diplomas. In the three highest grades the diplomas will state that the recipient is entitled to a medal. Bronze medals will be supplied without charge by the authorities of the exhibition, but because of the costliness of the silver and gold medals the recipients will be expected to pay for them a sum not exceeding the actual cost thereof. Every effort will be made to secure the prompt delivery of medals and diplomas. The preparation of these tokens does not rest with the juries nor with the commissioner of awards, but belongs to another part of the administration. If any unexpected delay arises in the production of the medals and diplomas, temporary certificates will be issued, properly authenticated, which will serve for the moment to indicate the successful exhibits.

4. The award will be made, not by individual judges, but by juries distributed into different sections, according to the classification originally adopted in the administration of the exposition, already made public. The attendance is assured of experts in all the main departments of the exposition, residents of different sections of the country, who are fitted by their high character and attainments to command the confidence of the exhibitors and of the public. Thus far only citizens of the United States have been appointed, but if it is found desirable to associate with them judges from foreign countries, that course will be taken. No one will act as a judge in any department where he has, directly or indirectly, an official or financial interest. The jury in each department will be small, in order that decisions may be made with greater promptness and efficiency. In the selections that have been made the personal qualifications of every individual have been carefully considered.

The exposition has been divided into ten departments, each covering the following:

MINERALS AND FORESTRY.

1. Minerals, ores and geological specimens.
2. Gold, silver and other metals.
3. History and literature of mining and metallurgy.
4. Forestry and forest products.

AGRICULTURE, FOOD AND ITS ACCESSORIES, MACHINERY AND APPLIANCES.

5. Cereals, grain and forage plants.
6. Breads, biscuits, crackers, pastes, starch, food preparations.
7. Sugars, syrups, confectionery, etc.
8. Pototoes, tubers and unclassed farm products, coffee, spices, etc.
9. Tobacco culture and manufacture.
10. Animal and vegetable fibres.
11. Miscellaneous animal products, fertilizers, etc.
12. Fats, oils, soaps, etc.
13. The dairy and dairy products.
14. Mineral waters, whiskies, liquors, alcohol, cider, malt liquors, etc.
15. Farming tools, implements, machinery appliances and buildings.

HORTICULTURE, VITICULTURE, POMOLOGY, FLORICULTURE, ETC.

16. Viticulture.
17. Pomology and manufactured products, etc.
18. Floriculture.
19. Seeds—raising, testing and distribution; arboriculture—appliances, methods, etc.

MACHINERY.

20. Motors and apparatus for the generation and transmission of power, etc.
21. Apparatus, machines and machine tools for extracting and working metals, etc.
22. Machines and apparatus used in mining.
23. Fire engines, apparatus, etc.
24. Miscellaneous machines.
25. Machines for woodworking.
26. Miscellaneous machines, tools, etc.
27. Machines used in preparation of food, etc.
28. Machines for printing, typesetting, book-making and paper-working, etc.
29. Lithography, color printing, processes of illustrating, etc.

MANUFACTURES.

30. Chemical and pharmaceutical products, druggists' supplies.
31. Paints, colors, dyes and varnishes.
32. Paper, blank books, stationery and typewriters.
33. Furniture, upholstery and decoration.
34. Ceramics and mosaics.
35. Marble, stone, metal monuments, etc., mantels, etc., caskets, coffins, etc.
36. Art metal work, enamels, etc.
37. Glass and glassware and in decoration.
38. Carvings in various materials.
39. Gold and silverware, plate, etc.
40. Jewelry, ornaments, watches, clocks, etc.
41. Silks and silk fabrics.
42. Fabrics of cotton, linen and other vegetable fibres, etc.
43. Woven and felted goods of wool and mixtures of wool.
44. Clothing and costumes, furs, etc.
45. Laces, embroideries, trimmings, artificial flowers, fans and accessories of the toilet.
46. Traveling equipments, trunks, valises, etc., umbrellas, parasols, etc.
47. Rubber goods and similar fabrics.
48. Leather and manufactures of leather, hides and skins.
49. Scales, weights, measures.
50. Ordnance and ammunition, military and sporting small arms, apparatus for hunting, trapping, etc.
51. Lighting apparatus and appliances.
52. Heating and cooking apparatus and appliances.
53. Wire goods, lattice work, fencing, wrought iron and other metal exhibits.
54. Vaults, safes, hardware, edge tools, cutlery.
55. Plumbing and sanitary materials.

ELECTRICITY AND ELECTRICAL APPLIANCES.

56. Apparatus illustrating the phenomena and laws of electricity and magnetism.
57. Apparatus for electrical measurements.
58. Electric batteries, primary and secondary.
59. Machines and appliances for producing electrical currents by mechanical power, dynamic electricity.
60. Transmission and regulation of the electrical current.
61. Electric motors.
62. Application of electric motors.
63. Lighting by electricity.
64. Heating by electricity.
65. Electro-metallurgy and electro-chemistry.
66. Electric forging, welding, stamping, tempering, brazing, etc.
67. Electric telegraph and electric signals.
68. The telephone and its appliances; phonographs.
69. Electricity in surgery, dentistry and therapeutics.
70. Application of electricity in various ways not hereinbefore specified.
71. History and statistics of electrical invention.
72. Progress and development in electrical science and construction, as illustrated by models and drawings of various countries.

FINE ARTS, PAINTING, SCULPTURE AND DECORATION.

73. Sculpture.
74. Paintings in oil, water colors, etc.
75. Engravings, etchings, prints, etc.
76. Carving, etc.
77. Exhibits of private collections.

LIBERAL ARTS, EDUCATION, LITERATURE, MUSIC AND THE DRAMA.

78. Physical training and condition; hygiene.
79. Instruction and apparatus of medicine, surgery, prosthesis.
80. Primary, secondary and superior education.
81. Books, maps, etc.
82. Instruction of precision, experiment, research and photography; photographs.
83. Civil engineering, public works, constructive architecture.
84. Government and law.
85. Commerce, trade and banking.
86. Institutions for increase and diffusion of knowledge.
87. Social, industrial and co-operative associations.
88. Religious organizations and systems.
89 Music and musical instruments; the theatre.

LIVE STOCK, DOMESTIC AND WILD ANIMALS, FISH, FISHERIES AND FISH CULTURE.

90. Horses, asses and mules.
91. Cattle.
92. Sheep.
93. Swine, goats and other domestic animals not named.
94. Dogs, cats, etc.
95. Poultry and birds.
96. Insects and insect products.
97. Wild animals.
98. Fishes, living or preserved, shell fish, sponges, etc., reptiles, aquatic birds and animals.
99. Fish culture, fishing, etc.

TRANSPORTATION.

100. Railways, railway plants, etc.
101. Street cars and other short-line systems.
102. Vehicles and methods of transportation on common roads.
103. Aerial, pneumatic and other forms of transportation.
104. Vessels, boats, etc.

The judges of the various departments are as follows:

Forestry—W. H. Canby, botanist, Wilmington, Del.; Dr. Charles Mohr, Mobile, Ala.; Grifford Pinchot, Biltmore, N. C.; Prof. C. S. Sargent, Director Arnold Arboretum, Harvard College; Henry Trimble, editor American Journal of Pharmacy, Philadelphia.

Mining and Metallurgy—John Birkinbine, Philadelphia, Pa; James B. Randol, New York; Dr. Eugene A. Smith, Alabama; Joseph D. Weeks, Pittsburg, Pa.

Agriculture, etc.—Prof. Charles W. Dabney, University of Tennessee; D. D. Mallory, Baltimore, Md.; J. M. McBryde, Virginia College Agriculture; Prof. C. F. Vanderford, University of Tennessee; Prof. H. H. Wing, Cornell University. Prof. W. O. Atwater, Wesleyan University, Middletown, Conn.

Horticulture, etc.—P. J. Berckmaus, American Pomological Society, Augusta, Ga.; William R. Smith, United States Botanical Gardens, Washington, D. C.

Machinery—Rear-Admiral George E. Belknap, United States Navy; Gustav Bissing, United States Patent Office; Chancellor Winfield S. Chaplin, Washington University, St. Louis, Mo.; Prof. I N. Hollis, Harvard College; T. C. Mendenhall, Worcester Technological Ins itute, Massachusetts; Prof. C. B. Richards, Sheffield Scientific School, Yale College.

Manufactures—M. H. Chase, New York; W. S. Everett, Atlanta, Ga.; Paulding Farnham, New York; Jacob A. Goodwin, Memphis, Tenn.; Dr. Henry M. Hurd, Johns Hopkins Hospital, Baltimore, Md.; Daniel Miller, Baltimore, Md.; Prof. Ira Remsen, editor American Chemical Journal, Baltimore, Md.; Mrs. Ellen H. Richards, Boston, Mass.; W. S. Sanders, Atlanta; Commander T. F. Jewell, United States Navy.

Electricity—Prof. Brown Ayres, Tulane University, New Orleans; Prof. Louis Duncan, Society Electrical Engineers; Prof. Henry A. Rowland, Johns Hopkins University, Baltimore, Md.

Fine Arts, etc.—D. H. Burnham, Chicago; William A. Coffin, New York; F. W. Ruckstuhl, New York; Lorado Taft, Chicaga; G. G. Hubbard, Washington, D. C.

Liberal Arts, etc.—C. K. Adams, University of Wisconsin; J. A. Brashear, Allegheny, Pa.; A. W. Calhoun, Atlanta, Ga.; Miss Grace Dodge, New York; Dr. I. S. Hopkins, Georgia School of Technology, Atlanta, Ga.; Miss Agnes Irwin, dean of Radcliffe College, of Harvard College; Dr. James McAlister, president of Drexel Institute, Philadelphia, Pa.; Prof. Simon Newcomb, United States Navy; Thomas Nelson Page, Richmond, Va.; Prof. H. W. Parker, Yale College; Prof. Wm. T. Sedgwick, Massachusetts Institute of Tech-